

TEST REPORT

Applicant: TFIVE PTY LTD.
Address: 10/29 Lorne Ave Killara NSW 2071 Australia
Equipment Type: Motion Sensor P1
Model Name: MS-S02
Brand Name: Aqara
Test Standard: IEC 62368-1: 2014
AS/NZS 62368.1:2018
Test Date: May 27, 2022 ~ Jun. 08, 2022
Date of Issue: Jun. 22, 2022

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

Tested by: Jack Zhang

Checked by: Terry Wen

Approved by: Liao Jianming
(Technical Director)

Jack Zhang

Terry Wen

Jm Liao

Revision History

| Version | Issue Date | Revisions |
|----------------|----------------------|----------------------|
| <u>Rev. 01</u> | <u>Jun. 22, 2022</u> | <u>Initial Issue</u> |

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1 ADMINISTRATIVE DATA (GENERAL INFORMATION)

1.1 Identification of the Testing Laboratory

| | |
|--------------|---|
| Company Name | Shenzhen BALUN Technology Co., Ltd. |
| Address | Block B, 1/F, Baisha Science and Technology Park, Shahe West Road, Nanshan District, ShenZhen, GuangDong Province |
| Phone Number | +86 755 6685 0100 |

1.2 Identification of the Responsible Testing Location

| | |
|---------------|--|
| Test Location | Shenzhen BALUN Technology Co., Ltd. |
| Address | Block B, 1/F, Baisha Science and Technology Park, Shahe West Road, Nanshan District, ShenZhen, GuangDong Province |
| Description | All measurement facilities used to collect the measurement data are located at Block B, 1/F, Baisha Science and Technology Park, Shahe West Road, Nanshan District, ShenZhen, GuangDong Province |

2 PRODUCT INFORMATION

2.1 Applicant Information

| | |
|-----------|--|
| Applicant | TFIVE PTY LTD |
| Address | 10/29 Lorne Ave Killara NSW 2071 Australia |

2.2 Manufacturer Information

| | |
|--------------|--|
| Manufacturer | Lumi United Technology Co., Ltd. |
| Address | Room 801-804, Building 1, Chongwen Park, Nanshan iPark, No. 3370, Liuxian Avenue, Fuguang Community, Taoyuan Residential District, Nanshan District, Shenzhen, China |

2.3 Factory Information

| | |
|---------|---|
| Factory | / |
| Address | / |

2.4 General Description for Equipment under Test (EUT)

| | |
|---|------------------|
| Equipment Type: | Motion Sensor P1 |
| Model Name Under Test | MS-S02 |
| Series Model Name | N/A |
| Description of Model name differentiation | N/A |
| Hardware Version | V3 |
| Software Version | 0.0.0_0005 |
| Dimensions(Approx.) | N/A |
| Weight(Approx.) | 33g |

2.5 Ancillary Equipment

| | | |
|-----------------------|------------------------|-----------------------|
| Ancillary Equipment 1 | Button Battery | |
| | Brand Name | Panasonic |
| | Model No. | CR2450 |
| | Rated Voltage | 3.0V |
| | Limited charge Voltage | N/A |
| | Manufacturer | Panasonic Corporation |
| Note: | | |

2.6 Technical Information

The requirement for the following technical information of the EUT was tested in this report:

| | |
|--|---|
| Ratings | Input: 3Vdc (supply by 1* CR2450 battery) |
| Classification of use by | <input checked="" type="checkbox"/> Ordinary person <input type="checkbox"/> Instructed person <input type="checkbox"/> Skilled person <input checked="" type="checkbox"/> Children likely to be present |
| Supply Connection | <input type="checkbox"/> AC Mains <input type="checkbox"/> DC Mains <input checked="" type="checkbox"/> External Circuit - not Mains connected - <input checked="" type="checkbox"/> ES1 <input type="checkbox"/> ES2 <input type="checkbox"/> ES3 |
| Supply % Tolerance | <input type="checkbox"/> +10%/-10% <input type="checkbox"/> +20%/-15% <input type="checkbox"/> +____%/ -____% <input checked="" type="checkbox"/> None |
| Supply Connection – Type | <input type="checkbox"/> pluggable equipment type A - <input type="checkbox"/> non-detachable supply cord <input type="checkbox"/> appliance coupler <input type="checkbox"/> direct plug-in <input type="checkbox"/> mating connector <input type="checkbox"/> pluggable equipment type B - <input type="checkbox"/> non-detachable supply cord <input type="checkbox"/> appliance coupler <input type="checkbox"/> permanent connection <input type="checkbox"/> mating connector <input checked="" type="checkbox"/> other: Not directly connect to mains |
| Considered current rating of protective device as part of building or equipment installation | _____ A; Installation location: <input type="checkbox"/> building; <input type="checkbox"/> equipment <input checked="" type="checkbox"/> N/A |
| Equipment mobility | <input type="checkbox"/> movable <input type="checkbox"/> hand-held <input checked="" type="checkbox"/> transportable <input type="checkbox"/> stationary <input type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in <input type="checkbox"/> rack-mounting <input type="checkbox"/> wall-mounted |
| Over voltage category (OVC) | <input type="checkbox"/> OVC I <input type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input checked="" type="checkbox"/> other: Not directly connect to mains |
| Class of equipment | <input type="checkbox"/> Class I <input type="checkbox"/> Class II <input checked="" type="checkbox"/> Class III <input type="checkbox"/> Class II with functional earthing <input type="checkbox"/> Not classified |
| Access location | <input type="checkbox"/> restricted access area <input checked="" type="checkbox"/> N/A |
| Pollution degree (PD) | <input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3 |
| Manufacturer's specified | 55°C |

| | |
|--|--|
| maximum operating ambient | |
| IP protection class | <input checked="" type="checkbox"/> IPX0 <input type="checkbox"/> IP68 |
| Power Systems | <input type="checkbox"/> TN <input type="checkbox"/> TT <input type="checkbox"/> IT - ____ V _{L-L} ; <input type="checkbox"/> dc mains <input checked="" type="checkbox"/> N/A |
| Altitude during operation (m) | <input checked="" type="checkbox"/> 2000m or less <input type="checkbox"/> 5000 m |
| Altitude of test laboratory (m) | <input checked="" type="checkbox"/> 2000m or less <input type="checkbox"/> ____ m |
| Mass of equipment (kg) | <input checked="" type="checkbox"/> 33g |
| Note: The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual. | |

3 SUMMARY OF TEST

3.1 Test Standards

| No. | Identity | Document Title |
|-----|---------------------|--|
| 1 | IEC 62368-1:2014 | Audio/video, information and communication technology equipment –Part 1: Safety requirements |
| 2 | AS/NZS 62368.1:2018 | Audio/video, information and communication technology equipment –Part 1: Safety requirements |

3.2 Possible test box verdict

| Possible test box verdicts: |
|--|
| -test box does not apply to the test object. : N/A -test object does meet the requirement.....: P(Pass) -test object does not meet the requirement...: F(Fail) |

3.3 Test item

| | | |
|---|--|--|
| Tests performed (name of test and test clause): All applicable tests as described in Test Case and Measurement Sections were performed. | | Summary of compliance with National Differences: List of countries addressed: 1. AUSTRALIA / NEW ZEALAND |
| 4 | General requirements | |
| 4.8 | Products containing coin/button cell batteries | |
| 5.2 | Electrical energy source classifications | |
| 5.4.1.4, 6.3.2, 9.0, B.2.6 | Maximum operating temperatures for materials, components and systems | |
| 6.2.2 | Electrical power sources (PS) measurements for classification | |
| 9.4.1 | Equipment safeguards for thermal burn | |
| B.2.5 | Input tests | |
| B.3 | Simulated Abnormal operating condition tests | |
| B.4 | Simulated single fault conditions | |
| F.3.9 | Durability, legibility and permanence of markings | |
| Annex M | batteries | |
| T.4 | Steady force test, 100 N | |
| T.7 | Drop test | |
| T.8 | Stress relief test | |
| Manufacturer specified the operating temperature range: +55°C. | | |

3.4 General information

GENERAL REMARKS:

The test results presented in this report relate only to the object tested.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

"(see Enclosure #)" refers to additional information appended to the report.

"(see appended table)" refers to a table appended to the report.

GENERAL PRODUCT INFORMATION:

1. The equipment is a class III Motion Sensor P1, used as Audio/video, information and communication technology equipment which indoor use only.
2. Instructions and equipment marking related to safety is applied in the language that is acceptable in the country in which the equipment is to be sold.
3. The specified Max. ambient temperature is +55°C

ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:

(Note 1: Identify the following six (6) energy source forms based on the origin of the energy.)

(Note 2: The identified classification e.g., ES2, TS1, should be with respect to its ability to cause pain or injury on the body or its ability to ignite a combustible material. Any energy source can be declared Class 3 as a worse box classification e.g. PS3, ES3.

Electrically-caused injury (Clause 5):

(Note: Identify type of source, list sub-assembly or circuit designation and corresponding energy source classification)

Example: 5Vdc input

| Source of electrical energy | Corresponding classification (ES) |
|-----------------------------|-----------------------------------|
| All circuits | ES1 |

Electrically-caused fire (Clause 6):

(Note: List sub-assembly or circuit designation and corresponding energy source classification)

Example: Battery pack (maximum 85 watts): PS1

| Source of power or PIS | Corresponding classification (PS) |
|-----------------------------|-----------------------------------|
| Output of 1* button battery | PS1 |
| Internal circuit | PS1 |

Injury caused by hazardous substances (Clause 7)

(Note: Specify hazardous chemicals, whether produces ozone or other chemical construction not addressed as part of the component evaluation.)

Example: Liquid in filled component Glycol

| Source of hazardous substances | Corresponding chemical |
|--------------------------------|------------------------|
| button battery | Complied with annex M |

Mechanically-caused injury (Clause 8)

(Note: List moving part(s), fan, special installations, etc. & corresponding MS classification based on Table 35.)

Example: Wall mount unit MS1

| Source of kinetic/mechanical energy | Corresponding classification (MS) |
|---|-----------------------------------|
| Edges and corners of accessible parts | MS1 |
| Mass of EUT | MS1 |
| Thermal burn injury (Clause 9) (Note: Identify the surface or support, and corresponding energy source classification based on type of part, location, operating temperature and contact time in Table 38.) Example: Hand-held scanner – thermoplastic enclosure TS1 | |
| Source of thermal energy | Corresponding classification (TS) |
| Accessible parts | TS1 |
| Radiation (Clause 10) (Note: List the types of radiation present in the product and the corresponding energy source classification.) Example: DVD – Class 1 Laser Product | |
| Type of radiation | Corresponding classification (RS) |
| LEDs use as indicating lights of EUT | RS1 |

| OVERVIEW OF EMPLOYED SAFEGUARDS | | | | |
|---|---|------------------|---------------|---------------------------|
| Clause | Possible Hazard | | | |
| 5.1 | Electrically-caused injury | | | |
| Body Part (e.g. Ordinary) | Energy Source | Safeguards | | |
| | | Basic | Supplementary | Reinforced (Enclosure) |
| Ordinary | ES1: +3Vdc input | N/A | N/A | N/A |
| 6.1 | Electrically-caused fire | | | |
| Material part (e.g. mouse enclosure) | Energy Source | Safeguards | | |
| | | Basic | Supplementary | Reinforced |
| PCB | PS1: <15W (3Vd.c. supplied by 1* button battery) | See table 6.3 | N/A | N/A |
| Enclosure | PS1: <15W (3Vd.c. supplied by 1* button battery) | See table 6.3 | N/A | N/A |
| 7.1 | Injury caused by hazardous substances | | | |
| Body Part (e.g., skilled) | Energy Source (hazardous material) | Safeguards | | |
| | | Basic | Supplementary | Reinforced |

| | | | | |
|--|---|------------|---------------------|---------------------------|
| Ordinary | Lithium Manganese Dioxide Battery | N/A | Comply with annex M | N/A |
| 8.1 | Mechanically-caused injury | | | |
| Body Part (e.g. Ordinary) | Energy Source (MS3:High Pressure Lamp) | Safeguards | | |
| | | Basic | Supplementary | Reinforced (Enclosure) |
| Ordinary | MS1: Corner and edge are smooth | N/A | N/A | N/A |
| Ordinary | MS1: Mass of EUT | N/A | N/A | N/A |
| 9.1 | Thermal Burn – | | | |
| Body Part (e.g., Ordinary) | Energy Source (TS2) | Safeguards | | |
| | | Basic | Supplementary | Reinforced |
| Ordinary | TS1: Accessible parts | N/A | N/A | N/A |
| 10.1 | Radiation | | | |
| Body Part (e.g., Ordinary) | Energy Source (Output from audio port) | Safeguards | | |
| | | Basic | Supplementary | Reinforced |
| Ordinary | LED indicating light (RS1) | N/A | N/A | N/A |
| Supplementary Information: | | | | |
| (1) See attached energy source diagram for additional details. | | | | |
| (2) “N” – Normal Condition; “A” – Abnormal Condition; “S” Single Fault | | | | |

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

| | |
|----------------------------|------------------|
| Temperature (°C) | 15°C to 35°C |
| Relative Humidity (%) | 35% to 75% |
| Atmospheric Pressure (kPa) | 100kPa to 102kPa |

4.2 Test Equipment List

| No. | Equipment name | Manufacture | Serial No. | Calibration Due Data | Usage |
|-----|--------------------------------|-------------|-------------|----------------------|-------|
| 1 | Digital Caliper | AIRAJ | BZ-SFT-L228 | 2022/10/11 | √ |
| 2 | Heating Recorder | Agilent | BZ-SFT-L131 | 2023/01/04 | √ |
| 3 | High temperature test chamber | CANY | BZ-SFT-L222 | 2023/01/04 | √ |
| 4 | Pull and push Tester | HANDPI | BZ-SFT-L045 | 2022/10/11 | √ |
| 5 | Digital Multimeter | Fluke | BZ-SFT-L187 | 2023/01/04 | √ |
| 6 | Drop test board | BALUN | BZ-SFT-L059 | -- | √ |
| 7 | Electronic Scale | YINGHENG | BZ-SFT-L107 | 2022/10/11 | √ |
| 8 | DC power | ITECH | BZ-SFT-L143 | 2023/01/07 | √ |
| 9 | Temperature and humidity meter | CEM | BZ-SFT-L196 | 2022/10/12 | √ |

| Clause | Requirement-Test | Result-Remark | Verdict |
|--------|------------------|---------------|---------|
|--------|------------------|---------------|---------|

5 TEST RESULTS

| | | | |
|----------|--|---|----------|
| 4 | General Requirements | | P |
| 4.1.1 | Acceptance of materials, components and subassemblies | See appended table 4.1.2 | P |
| 4.1.2 | Use of components | Components which are certified to EN and/or national standards are used correctly within their ratings. Components not covered by EN standards are tested under the conditions present in the equipment. See also Annex G | P |
| 4.1.3 | Equipment design and construction | Evaluation of safeguards regarding limiting the outputs to fulfill ES1 and protection in regard to risk of spread of fire, mechanical and thermal burn injury considered. | P |
| 4.1.15 | Markings and instructions..... : | (See Annex F) | P |
| 4.4.4 | Safeguard robustness | See below. | P |
| 4.4.4.2 | Steady force tests..... : | (See Annex T.4) | P |
| 4.4.4.3 | Drop tests : | (See Annex T.7) | P |
| 4.4.4.4 | Impact tests : | | N/A |
| 4.4.4.5 | Internal accessible safeguard enclosure and barrier tests..... : | No such enclosure and barrier | N/A |
| 4.4.4.6 | Glass Impact tests : | No such glass used. | N/A |
| 4.4.4.7 | Thermoplastic material tests : | (See Annex T.8) | P |
| 4.4.4.8 | Air comprising a safeguard..... : | Considered, but no such barrier or enclosure provided | N/A |
| 4.4.4.9 | Accessibility and safeguard effectiveness | After tests of 4.4.4.2, 4.4.4.3, 4.4.4.7, no safeguard damaged. | P |
| 4.5 | Explosion | No explosion occurs during normal/abnormal operation and single fault conditions | P |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|--------|---|--|---------|
| 4.6 | Fixing of conductors | Only ES1 for internal circuits, no safeguard affected by conductor displacement. | N/A |
| 4.6.1 | Fix conductors not to defeat a safeguard | | N/A |
| 4.6.2 | 10 N force test applied to : | | N/A |
| 4.7 | Equipment for direct insertion into mains socket - outlets | The EUT is not for direct insertion into mains socket outlets, class III equipment | N/A |
| 4.7.2 | Mains plug part complies with the relevant standard..... : | | N/A |
| 4.7.3 | Torque (Nm)..... : | | N/A |
| 4.8 | Products containing coin/button cell batteries | | P |
| 4.8.2 | Instructional safeguard | See user manual | P |
| 4.8.3 | Battery Compartment Construction | | P |
| | Means to reduce the possibility of children removing the battery..... : | Open the battery compartment by a tool | — |
| 4.8.4 | Battery Compartment Mechanical Tests : | See table 4.8 | P |
| 4.8.5 | Battery Accessibility | See table 4.8 | P |
| 4.9 | Likelihood of fire or shock due to entry of conductive object..... : | No likelihood of conductive object entry into enclosure. | P |

| | | | |
|----------|--|--|-----|
| 5 | Electrically-caused injury | | P |
| 5.2.1 | Electrical energy source classifications : | (See appended table 5.2) | P |
| 5.2.2 | ES1, ES2 and ES3 limits | ES1 | P |
| 5.2.2.2 | Steady-state voltage and current : | (See appended table 5.2) | P |
| 5.2.2.3 | Capacitance limits..... : | Class III equipment | N/A |
| 5.2.2.4 | Single pulse limits : | No such single pulses generated in the EUT or applied to it. | N/A |
| 5.2.2.5 | Limits for repetitive pulses : | No such repetitive pulses within the EUT. | N/A |
| 5.2.2.6 | Ringing signals : | No such ringing signals within the EUT | N/A |
| 5.2.2.7 | Audio signals : | (See annex E.1) | N/A |

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|-------------|---|--|---------|
| Clause | Requirement-Test | Result-Remark | Verdict |
| 5.3 | Protection against electrical energy sources | See below | P |
| 5.3.1 | General Requirements for accessible parts to ordinary, instructed and skilled persons | | P |
| 5.3.2.1 | Accessibility to electrical energy sources and safeguards | Only ES1 circuit can be accessed for this product. | P |
| 5.3.2.2 | Contact requirements | No ES3 circuit. | P |
| | a) Test with test probe from Annex V | | N/A |
| | b) Electric strength test potential (V) | | N/A |
| | c) Air gap (mm) | | N/A |
| 5.3.2.4 | Terminals for connecting stripped wire | No such terminals. | N/A |
| 5.4 | Insulation materials and requirements | | P |
| 5.4.1.2 | Properties of insulating material | No such material | N/A |
| 5.4.1.3 | Humidity conditioning | No hygroscopic material used. | N/A |
| 5.4.1.4 | Maximum operating temperature for insulating materials | See table 5.4.1.4 | P |
| 5.4.1.5 | Pollution degree | 2 | — |
| 5.4.1.5.2 | Test for pollution degree 1 environment and for an insulating compound | Pollution degree 2 is applied. No insulating compound applied (however see 5.5.4). | N/A |
| 5.4.1.5.3 | Thermal cycling | See above | N/A |
| 5.4.1.6 | Insulation in transformers with varying dimensions | No such transformer within the EUT | N/A |
| 5.4.1.7 | Insulation in circuits generating starting pulses | No such starting pulses within the EUT | N/A |
| 5.4.1.8 | Determination of working voltage | | N/A |
| 5.4.1.9 | Insulating surfaces | | N/A |
| 5.4.1.10 | Thermoplastic parts on which conductive metallic parts are directly mounted | | N/A |
| 5.4.1.10.2 | Vicat softening temperature..... | | N/A |
| 5.4.1.10.3 | Ball pressure | | N/A |
| 5.4.2 | Clearances | | N/A |
| 5.4.2.2 | Determining clearance using peak working voltage | | N/A |

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|-------------|---|--------------------------------|---------|
| Clause | Requirement-Test | Result-Remark | Verdict |
| 5.4.2.3 | Determining clearance using required withstand voltage | | N/A |
| | a) a.c. mains transient voltage | | — |
| | b) d.c. mains transient voltage | | — |
| | c) external circuit transient voltage | | — |
| | d) transient voltage determined by measurement : | | — |
| 5.4.2.4 | Determining the adequacy of a clearance using an electric strength test | | N/A |
| 5.4.2.5 | Multiplication factors for clearances and test voltages | | N/A |
| 5.4.3 | Creepage distances | | N/A |
| 5.4.3.1 | General | | N/A |
| 5.4.3.3 | Material Group | | — |
| 5.4.4 | Solid insulation | | N/A |
| 5.4.4.2 | Minimum distance through insulation | | N/A |
| 5.4.4.3 | Insulation compound forming solid insulation | | N/A |
| 5.4.4.4 | Solid insulation in semiconductor devices | | N/A |
| 5.4.4.5 | Cemented joints | | N/A |
| 5.4.4.6 | Thin sheet material | | N/A |
| 5.4.4.6.1 | General requirements | | N/A |
| 5.4.4.6.2 | Separable thin sheet material | | N/A |
| | Number of layers (pcs) | | N/A |
| 5.4.4.6.3 | Non-separable thin sheet material | | N/A |
| 5.4.4.6.4 | Standard test procedure for non-separable thin sheet material..... | See above | N/A |
| 5.4.4.6.5 | Mandrel test | | N/A |
| 5.4.4.7 | Solid insulation in wound components | | N/A |
| 5.4.4.9 | Solid insulation at frequencies >30 kHz | | N/A |
| 5.4.5 | Antenna terminal insulation | No such antenna terminal used. | N/A |
| 5.4.5.1 | General | | N/A |
| 5.4.5.2 | Voltage surge test | | N/A |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|------------|--|---|---------|
| | Insulation resistance (MΩ) | | N/A |
| 5.4.6 | Insulation of internal wire as part of supplementary safeguard | No such insulation of internal wire as part of supplementary safeguard. | N/A |
| 5.4.7 | Tests for semiconductor components and for cemented joints | No tests necessary – see only 5.4.4.4. | N/A |
| 5.4.8 | Humidity conditioning | | N/A |
| | Relative humidity (%) | | — |
| | Temperature (°C) | | — |
| | Duration (h) | | — |
| 5.4.9 | Electric strength test..... | | N/A |
| 5.4.9.1 | Test procedure for a solid insulation type test | | N/A |
| 5.4.9.2 | Test procedure for routine tests | | N/A |
| 5.4.10 | Protection against transient voltages between external circuit | No such external circuits | N/A |
| 5.4.10.1 | Parts and circuits separated from external circuits | | N/A |
| 5.4.10.2 | Test methods | | N/A |
| 5.4.10.2.1 | General | | N/A |
| 5.4.10.2.2 | Impulse test | | N/A |
| 5.4.10.2.3 | Steady-state test | | N/A |
| 5.4.11 | Insulation between external circuits and earthed circuitry | No such external circuits | N/A |
| 5.4.11.1 | Exceptions to separation between external circuits and earth | | N/A |
| 5.4.11.2 | Requirements | | N/A |
| | Rated operating voltage U_{op} (V) | | — |
| | Nominal voltage U_{peak} (V) | | — |
| | Max increase due to variation U_{sp} | | — |
| | Max increase due to ageing ΔU_{sa} | | — |
| | $U_{op} = U_{peak} + \Delta U_{sp} + \Delta U_{sa}$ | | — |
| 5.5 | Components as safeguards | | |
| 5.5.1 | General | | N/A |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|---------|---|---|---------|
| 5.5.2 | Capacitors and RC units | | N/A |
| 5.5.2.1 | General requirement | | N/A |
| 5.5.2.2 | Safeguards against capacitor discharge after disconnection of a connector : | | N/A |
| 5.5.3 | Transformers | | N/A |
| 5.5.4 | Optocouplers | | N/A |
| 5.5.5 | Relays | | N/A |
| 5.5.6 | Resistors | | N/A |
| 5.5.7 | SPD's | | N/A |
| 5.5.7.1 | Use of an SPD connected to reliable earthing | No such construction. | N/A |
| 5.5.7.2 | Use of an SPD between mains and protective earth | | N/A |
| 5.5.8 | Insulation between the mains and external circuit consisting of a coaxial cable : | No such external circuits. | N/A |
| 5.6 | Protective conductor | | N/A |
| 5.6.2 | Requirement for protective conductors | Class III equipment with no means of earthing | N/A |
| 5.6.2.1 | General requirements | | N/A |
| 5.6.2.2 | Colour of insulation | | N/A |
| 5.6.3 | Requirement for protective earthing conductors | | NA |
| | Protective earthing conductor size (mm ²) : | | — |
| 5.6.4 | Requirement for protective bonding conductors | | N/A |
| 5.6.4.1 | Protective bonding conductors | | N/A |
| | Protective bonding conductor size (mm ²)..... : | | — |
| | Protective current rating (A) : | | — |
| 5.6.4.3 | Current limiting and overcurrent protective devices | | N/A |
| 5.6.5 | Terminals for protective conductors | | N/A |
| 5.6.5.1 | Requirement | | N/A |
| | Conductor size (mm ²), nominal thread diameter (mm). : | | N/A |
| 5.6.5.2 | Corrosion | | N/A |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|---------|---|-----------------------|---------|
| 5.6.6 | Resistance of the protective system | | N/A |
| 5.6.6.1 | Requirements | | N/A |
| 5.6.6.2 | Test Method Resistance (Ω).....: | | N/A |
| 5.6.7 | Reliable earthing | | N/A |
| 5.7 | Prospective touch voltage, touch current and protective conductor current | | N/A |
| 5.7.2 | Measuring devices and networks | | N/A |
| 5.7.2.1 | Measurement of touch current | | N/A |
| 5.7.2.2 | Measurement of prospective touch voltage | | N/A |
| 5.7.3 | Equipment set-up, supply connections and earth connections | | N/A |
| | System of interconnected equipment (separate connections/single connection) | | — |
| | Multiple connections to mains (one connection at a time/simultaneous connections).....: | | — |
| 5.7.4 | Earthed conductive accessible parts | | N/A |
| 5.7.5 | Protective conductor current | | N/A |
| | Supply Voltage (V).....: | | — |
| | Measured current (mA) | | — |
| | Instructional Safeguard | | N/A |
| 5.7.6 | Prospective touch voltage and touch current due to external circuits | No external circuits. | N/A |
| 5.7.6.1 | Touch current from coaxial cables | | N/A |
| 5.7.6.2 | Prospective touch voltage and touch current from external circuits | | N/A |
| 5.7.7 | Summation of touch currents from external circuits | No external circuits. | N/A |
| | a) Equipment with earthed external circuits Measured current (mA) | | N/A |
| | b) Equipment whose external circuits are not referenced to earth. Measured current (mA).....: | | N/A |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|--------|------------------|---------------|---------|
|--------|------------------|---------------|---------|

| | | | |
|-----------|--|---|----------|
| 6 | Electrically- caused fire | | P |
| 6.2 | Classification of power sources (PS) and potential ignition sources (PIS) | | P |
| 6.2.2 | Power source circuit classifications | PS (power source) classification determined by measuring the maximum power in Figures 34 and 35 for load and power source circuits. | P |
| 6.2.2.1 | General | | P |
| 6.2.2.2 | Power measurement for worst-box load fault : | (See appended table 6.2.2) | P |
| 6.2.2.3 | Power measurement for worst-box power source fault : | (See appended table 6.2.2) | P |
| 6.2.2.4 | PS1 : | (See appended table 6.2.2) | P |
| 6.2.2.5 | PS2 : | (See appended table 6.2.2) | N/A |
| 6.2.2.6 | PS3 : | (See appended table 6.2.2) | N/A |
| 6.2.3 | Classification of potential ignition sources | | N/A |
| 6.2.3.1 | Arcing PIS : | (See appended table 6.2.3.1) | N/A |
| 6.2.3.2 | Resistive PIS : | (See appended table 6.2.3.2) | N/A |
| 6.3 | Safeguards against fire under normal operating and abnormal operating conditions | | P |
| 6.3.1 (a) | No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials : | No ignition and no such temperature attained within the equipment. (See appended table 5.4.1.4, 6.3.2, 9.0, B.2.6) | P |
| 6.3.1 (b) | Combustible materials outside fire enclosure | (See appended table 5.4.1.4, 6.3.2, 9.0, B.2.6) | N/A |
| 6.4 | Safeguards against fire under single fault conditions | | N/A |
| 6.4.1 | Safeguard Method | Method by control of fire spread applied. | P |
| 6.4.2 | Reduction of the likelihood of ignition under single fault conditions in PS1 circuits | | N/A |
| 6.4.3 | Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits | | N/A |
| 6.4.3.1 | General | | N/A |
| 6.4.3.2 | Supplementary Safeguards | | N/A |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|-----------|--|-------------------------------|---------|
| | Special conditions if conductors on printed boards are opened or peeled | | N/A |
| 6.4.3.3 | Single Fault Conditions..... : | | N/A |
| | Special conditions for temperature limited by fuse | No such consideration. | N/A |
| 6.4.4 | Control of fire spread in PS1 circuits | | P |
| 6.4.5 | Control of fire spread in PS2 circuits | | N/A |
| 6.4.5.2 | Supplementary safeguards : | | N/A |
| 6.4.6 | Control of fire spread in PS3 circuit | | N/A |
| 6.4.7 | Separation of combustible materials from a PIS | | N/A |
| 6.4.7.1 | General..... : | | N/A |
| 6.4.7.2 | Separation by distance | | N/A |
| 6.4.7.3 | Separation by a fire barrier | No specific barrier provided. | N/A |
| 6.4.8 | Fire enclosures and fire barriers | See below. | N/A |
| 6.4.8.1 | Fire enclosure and fire barrier material properties | | N/A |
| 6.4.8.2.1 | Requirements for a fire barrier | | N/A |
| 6.4.8.2.2 | Requirements for a fire enclosure | | N/A |
| 6.4.8.3 | Constructional requirements for a fire enclosure and a fire barrier | See below | N/A |
| 6.4.8.3.1 | Fire enclosure and fire barrier openings | No openings. | N/A |
| 6.4.8.3.2 | Fire barrier dimensions | No fire barrier. | N/A |
| 6.4.8.3.3 | Top Openings in Fire Enclosure: dimensions (mm) : | No openings | N/A |
| | Needle Flame test | | N/A |
| 6.4.8.3.4 | Bottom Openings in Fire Enclosure, condition met a), b) and/or c) dimensions (mm) : | No openings | N/A |
| | Flammability tests for the bottom of a fire enclosure : | | N/A |
| 6.4.8.3.5 | Integrity of the fire enclosure, condition met: a), b) or c) : | | N/A |
| 6.4.8.4 | Separation of PIS from fire enclosure and fire barrier distance (mm) or flammability rating..... : | | N/A |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|--------|---|---------------|---------|
| 6.5 | Internal and external wiring | | N/A |
| 6.5.1 | Requirements | | N/A |
| 6.5.2 | Cross-sectional area (mm ²) : | | — |
| 6.5.3 | Requirements for interconnection to building wiring : | | N/A |
| 6.6 | Safeguards against fire due to connection to additional equipment | | N/A |
| | External port limited to PS2 or complies with Clause Q.1 | | N/A |

| | | | |
|----------|--|------------------------------|-----|
| 7 | INJURY CAUSED BY HAZARDOUS SUBSTANCES | | P |
| 7.2 | Reduction of exposure to hazardous substances | No such hazardous substances | N/A |
| 7.3 | Ozone exposure | No ozone production | N/A |
| 7.4 | Use of personal safeguards (PPE) | | N/A |
| | Personal safeguards and instructions : | | — |
| 7.5 | Use of instructional safeguards and instructions | | N/A |
| | Instructional safeguard (ISO 7010) : | | — |
| 7.6 | Batteries : | (See Annex M) | P |

| | | | |
|----------|---|---|-----|
| 8 | MECHANICALLY-CAUSED INJURY | | P |
| 8.1 | General | No moving parts in the equipment – see below regarding edges and corners. | P |
| 8.2 | Mechanical energy source classifications | MS1 | P |
| 8.3 | Safeguards against mechanical energy sources | | P |
| 8.4 | Safeguards against parts with sharp edges and corners | Edges and corners of the enclosure are rounded. | N/A |
| 8.4.1 | Safeguards | MS1 classification | N/A |
| 8.5 | Safeguards against moving parts | No moving parts. | N/A |
| 8.5.1 | MS2 or MS3 part required to be accessible for the function of the equipment | | N/A |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|-----------|--|---|---------|
| 8.5.2 | Instructional Safeguard..... : | | — |
| 8.5.4 | Special categories of equipment comprising moving parts | | N/A |
| 8.5.4.1 | Large data storage equipment | | N/A |
| 8.5.4.2 | Equipment having electromechanical device for destruction of media | | N/A |
| 8.5.4.2.1 | Safeguards and Safety Interlocks | | N/A |
| 8.5.4.2.2 | Instructional safeguards against moving parts | | N/A |
| | Instructional Safeguard.....: | | — |
| 8.5.4.2.3 | Disconnection from the supply | | N/A |
| 8.5.4.2.4 | Probe type and force (N) | | N/A |
| 8.5.5 | High Pressure Lamps | | N/A |
| 8.5.5.1 | Energy Source Classification | | N/A |
| 8.5.5.2 | High Pressure Lamp Explosion Test | | N/A |
| 8.6 | Stability | Classification MS1 according to table 35, line 5 and no stability requirements. | N/A |
| 8.6.1 | Product classification | MS1 | N/A |
| | Instructional Safeguard.....: | Not required | — |
| 8.6.2 | Static stability | | N/A |
| 8.6.2.2 | Static stability test | | N/A |
| | Applied Force | | — |
| 8.6.2.3 | Downward Force Test | | N/A |
| 8.6.3 | Relocation stability test | | N/A |
| | Unit configuration during 10° tilt | | — |
| 8.6.4 | Glass slide test | | N/A |
| 8.6.5 | Horizontal force test (Applied Force).....: | | N/A |
| | Position of feet or movable parts.....: | | — |
| 8.7 | Equipment mounted to wall or ceiling | Not such equipment | N/A |
| 8.7.1 | Mounting Means (Length of screws (mm) and mounting surface) | | N/A |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|--------|--|---------------------------------------|---------|
| 8.7.2 | Direction and applied force | | N/A |
| 8.8 | Handles strength | | N/A |
| 8.8.1 | Classification | | N/A |
| 8.8.2 | Applied Force | | N/A |
| 8.9 | Wheels or casters attachment requirements | No wheels or casters. | N/A |
| 8.9.1 | Classification | | N/A |
| 8.9.2 | Applied force | | — |
| 8.10 | Carts, stands and similar carriers | No carts, stands or similar carriers. | N/A |
| 8.10.1 | General | | N/A |
| 8.10.2 | Marking and instructions | | N/A |
| | Instructional Safeguard..... | | — |
| 8.10.3 | Cart, stand or carrier loading test and compliance | | N/A |
| | Applied force | | — |
| 8.10.4 | Cart, stand or carrier impact test | | N/A |
| 8.10.5 | Mechanical stability | | N/A |
| | Applied horizontal force (N) | | — |
| 8.10.6 | Thermoplastic temperature stability (°C)..... | | N/A |
| 8.11 | Mounting means for rack mounted equipment | Not such equipment. | N/A |
| 8.11.1 | General | | N/A |
| 8.11.2 | Product Classification | | N/A |
| 8.11.3 | Mechanical strength test, variable <i>N</i> | | N/A |
| 8.11.4 | Mechanical strength test 250N, including end stops | | N/A |
| 8.12 | Telescoping or rod antennas | No such parts. | N/A |
| | Button/Ball diameter (mm)..... | | — |

| | | | |
|----------|---------------------------------------|--|----------|
| 9 | Thermal burn injury | | P |
| 9.2 | Thermal energy source classifications | No part considered to be accessible other than enclosure. The equipment evaluated by temperature test (see table 5.4.1.4). | P |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|--------|------------------|---------------|---------|
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| | | | |
|-------|--|---|-----|
| 9.3 | Safeguard against thermal energy sources | Temperature of enclosure classed as TS1. | N/A |
| 9.4 | Requirements for safeguards | | N/A |
| 9.4.1 | Equipment safeguard | Enclosure provided to limit the transfer of thermal energy of internal parts under normal operating conditions and abnormal operating conditions. | N/A |
| 9.4.2 | Instructional safeguard | | N/A |

| | | | |
|-----------|---|-------------------------------------|-----|
| 10 | RADIATION | | P |
| 10.2 | Radiation energy source classification | Led used as indicating light | P |
| 10.2.1 | General classification | RS1 | P |
| 10.3 | Protection against laser radiation | No laser radiation | N/A |
| | Laser radiation that exists equipment: | | — |
| | Normal, abnormal, single-fault | | N/A |
| | Instructional safeguard | | — |
| | Tool | | — |
| 10.4 | Protection against visible, infrared, and UV radiation | | P |
| 10.4.1 | General | RS1 | P |
| 10.4.1.a) | RS3 for Ordinary and instructed persons..... | | N/A |
| 10.4.1.b) | RS3 accessible to a skilled person | | N/A |
| | Personal safeguard (PPE) instructional safeguard | | — |
| 10.4.1.c) | Equipment visible, IR, UV does not exceed RS1 . : | | N/A |
| 10.4.1.d) | Normal, abnormal, single-fault conditions | LED only used for indicating light. | P |
| 10.4.1.e) | Enclosure material employed as safeguard is opaque..... | | N/A |
| 10.4.1.f) | UV attenuation..... | | N/A |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|-----------|--|--|---------|
| 10.4.1.g) | Materials resistant to degradation UV | | N/A |
| 10.4.1.h) | Enclosure containment of optical radiation | | N/A |
| 10.4.1.i) | Exempt Group under normal operating conditions: | LED only used for indicating light. | P |
| 10.4.2 | Instructional safeguard | | N/A |
| 10.5 | Protection against x-radiation | No such x-radiation generated from the equipment | N/A |
| 10.5.1 | X- radiation energy source that exists equipment | | N/A |
| | Normal, abnormal, single fault conditions | | N/A |
| | Equipment safeguards | | N/A |
| | Instructional safeguard for skilled person..... | | N/A |
| 10.5.3 | Most unfavourable supply voltage to give maximum radiation..... | | — |
| | Abnormal and single-fault condition | | N/A |
| | Maximum radiation (pA/kg) | | N/A |
| 10.6 | Protection against acoustic energy sources | Not such an equipment. | N/A |
| 10.6.1 | General | | N/A |
| 10.6.2 | Classification | | N/A |
| | Acoustic output, dB(A)..... | See clause 10.6.5.3 | N/A |
| | Output voltage, unweighted r.m.s..... | | N/A |
| 10.6.4 | Protection of persons | | N/A |
| | Instructional safeguards | | N/A |
| | Equipment safeguard prevent ordinary person to RS2..... | | — |
| | Means to actively inform user of increase sound pressure..... | | — |
| | Equipment safeguard prevent ordinary person to RS2..... | | — |
| 10.6.5 | Requirements for listening devices (headphones, earphones, etc.) | | N/A |
| 10.6.5.1 | Corded passive listening devices with analog input | | N/A |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|----------|--|---------------|---------|
| | Input voltage with 94 dB(A) L_{Aeq} acoustic pressure output | | — |
| 10.6.5.2 | Corded listening devices with digital input | | N/A |
| | Maximum dB(A)..... | | — |
| 10.6.5.3 | Cordless listening device | | N/A |
| | Maximum dB(A)..... | | — |

| B | NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS | | P |
|-------|---|--|-----|
| B.2 | Normal Operating Conditions | See the following details. | P |
| B.2.1 | General requirements | Maximum rated output applied (See appended table) | P |
| | Audio Amplifiers and equipment with audio amplifiers | | N/A |
| B.2.3 | Supply voltage and tolerances | | N/A |
| B.2.5 | Input test..... | (See appended table B.2.5) | P |
| B.3 | Simulated abnormal operating conditions | | P |
| B.3.1 | General requirements | (See appended table B.3 & B.4) | P |
| B.3.2 | Covering of ventilation openings | No ventilation openings. | N/A |
| B.3.3 | D.C. mains polarity test | The EUT is not connected to a D.C. mains | N/A |
| B.3.4 | Setting of voltage selector | No setting of voltage selector within the EUT | N/A |
| B.3.5 | Maximum load at output terminals | No output terminals | N/A |
| B.3.6 | Reverse battery polarity | No reverse battery polarity | N/A |
| B.3.7 | Abnormal operating conditions as specified in Clause E.2. | Not such equipment. | N/A |
| B.3.8 | Safeguards functional during and after abnormal operating conditions | All safeguards remained effective. | N/A |
| B.4 | Simulated single fault conditions | | P |
| B.4.2 | Temperature controlling device open or short-circuited : | No such device used. | N/A |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|---------|---|---|---------|
| B.4.3 | Motor tests | No motor used | N/A |
| B.4.3.1 | Motor blocked or rotor locked increasing the internal ambient temperature | | N/A |
| B.4.4 | Short circuit of functional insulation | See the following details. | P |
| B.4.4.1 | Short circuit of clearances for functional insulation | (See appended table B.3 & B.4) | P |
| B.4.4.2 | Short circuit of creepage distances for functional insulation | | N/A |
| B.4.4.3 | Short circuit of functional insulation on coated printed boards | No coated printed boards within the EUT | N/A |
| B.4.5 | Short circuit and interruption of electrodes in tubes and semiconductors | | N/A |
| B.4.6 | Short circuit or disconnect of passive components | | P |
| B.4.7 | Continuous operation of components | The EUT is continuous operating type and no such components intended for short time operation or intermittent operation | N/A |
| B.4.8 | Class 1 and Class 2 energy sources within limits during and after single fault conditions | No change to circuits classified in 5.3. | P |
| B.4.9 | Battery charging under single fault conditions | | N/A |

| | | | |
|----------|--|--|-----|
| C | UV RADIATION | | N/A |
| C.1 | Protection of materials in equipment from UV radiation | No such UV generated from the equipment. | N/A |
| C.1.2 | Requirements | | N/A |
| C.1.3 | Test method | | N/A |
| C.2 | UV light conditioning test | | N/A |
| C.2.1 | Test apparatus | | N/A |
| C.2.2 | Mounting of test samples | | N/A |
| C.2.3 | Carbon-arc light-exposure apparatus | | N/A |
| C.2.4 | Xenon-arc light exposure apparatus | | N/A |

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|-------------|------------------|---------------|---------|
| Clause | Requirement-Test | Result-Remark | Verdict |

| | | | |
|----------|----------------------------------|--|-----|
| D | TEST GENERATORS | | N/A |
| D.1 | Impulse test generators | | N/A |
| D.2 | Antenna interface test generator | | N/A |
| D.3 | Electronic pulse generator | | N/A |

| | | | |
|----------|--|---------------------|-----|
| E | TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS | | N/A |
| E.1 | Audio amplifier normal operating conditions | Not such equipment. | N/A |
| | Audio signal voltage (V) | | — |
| | Rated load impedance (Ω) | | — |
| E.2 | Audio amplifier abnormal operating conditions | | N/A |

| | | | |
|----------|---|--|-----|
| F | EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS | | P |
| F.1 | General requirements | See the following details. | P |
| | Instructions – Language | English checked | — |
| F.2 | Letter symbols and graphical symbols | See the following details. | P |
| F.2.1 | Letter symbols according to IEC60027-1 | Letter symbols for quantities and units are complied with IEC 60227-1. | P |
| F.2.2 | Graphic symbols IEC, ISO or manufacturer specific | Graphical symbols are complied with IEC 60417, ISO 3864-2, ISO 7000 or ISO 7010. | P |
| F.3 | Equipment markings | | P |
| F.3.1 | Equipment marking locations | Equipment marking located on charging box body. | P |
| F.3.2 | Equipment identification markings | See the following details. | P |
| F.3.2.1 | Manufacturer identification | See copy of marking plate | — |
| F.3.2.2 | Model identification | See page 4 for details. | — |
| F.3.3 | Equipment rating markings | See the following details. | P |
| F.3.3.1 | Equipment with direct connection to mains | Class III equipment | N/A |

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|-----------|---|---|---------|
| F.3.3.2 | Equipment without direct connection to mains | Power rating mark not required, however see above for actual markings | P |
| F.3.3.3 | Nature of supply voltage | --- | — |
| F.3.3.4 | Rated voltage | See copy of marking plate | — |
| F.3.3.4 | Rated frequency | DC supply | — |
| F.3.3.6 | Rated current or rated power | See copy of marking plate | — |
| F.3.3.7 | Equipment with multiple supply connections | No multiple supply connection. | N/A |
| F.3.4 | Voltage setting device | No such device. | N/A |
| F.3.5 | Terminals and operating devices | | N/A |
| F.3.5.1 | Mains appliance outlet and socket-outlet markings | No mains appliance outlet. | N/A |
| F.3.5.2 | Switch position identification marking | Not such switch. | N/A |
| F.3.5.3 | Replacement fuse identification and rating markings | | N/A |
| F.3.5.4 | Replacement battery identification marking | No such battery | N/A |
| F.3.5.5 | Terminal marking location | | N/A |
| F.3.6 | Equipment markings related to equipment classification | | N/A |
| F.3.6.1 | Class I Equipment | Class III equipment | N/A |
| F.3.6.1.1 | Protective earthing conductor terminal | | N/A |
| F.3.6.1.2 | Neutral conductor terminal | | N/A |
| F.3.6.1.3 | Protective bonding conductor terminals | | N/A |
| F.3.6.2 | Class II equipment (IEC60417-5172) | Class III equipment | N/A |
| F.3.6.2.1 | Class II equipment with or without functional earth | | N/A |
| F.3.6.2.2 | Class II equipment with functional earth terminal marking | | N/A |
| F.3.7 | Equipment IP rating marking | IP68 | — |
| F.3.8 | External power supply output marking | No external power supply output | N/A |
| F.3.9 | Durability, legibility and permanence of marking | Marking is considered to be legible and easily discernible. See also the following details. | P |

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| Clause | Requirement-Test | Result-Remark | Verdict |
| F.3.10 | Test for permanence of markings | The label was subjected to the permanence of marking test. The label was rubbed with cloth soaked with water for 15 sec. And then again for 15 sec. With the cloth soaked with petroleum spirit. After this test there was no damage to the label. The marking on the label did not fade. There was no curling and lifting of the label edge. After each test, the marking remained legible. | P |
| F.4 | Instructions | | P |
| | a) Equipment for use in locations where children not likely to be present - marking | | N/A |
| | b) Instructions given for installation or initial use | | P |
| | c) Equipment intended to be fastened in place | | N/A |
| | d) Equipment intended for use only in restricted access area | Not used in restricted access area. | N/A |
| | e) Audio equipment terminals classified as ES3 and other equipment with terminals marked in accordance F.3.6.1 | | N/A |
| | f) Protective earthing employed as safeguard | | N/A |
| | g) Protective earthing conductor current exceeding ES2 limits | | N/A |
| | h) Symbols used on equipment | No such symbols used as a safeguard considered. | N/A |
| | i) Permanently connected equipment not provided with all-pole mains switch | Not permanently connected equipment. | N/A |
| | j) Replaceable components or modules providing safeguard function | No such markings. | P |
| F.5 | Instructional safeguards | See user manual | P |
| | Where “instructional safeguard” is referenced in the test report it specifies the required elements, location of marking and/or instruction | | P |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|--------|------------------|---------------|---------|
|--------|------------------|---------------|---------|

| G | COMPONENTS | | P |
|---------------|--|---|----------|
| G.1 | Switches | | N/A |
| G.1.1 | General requirements | No switch used. | N/A |
| G.1.2 | Ratings, endurance, spacing, maximum load | | N/A |
| G.2 | Relays | | N/A |
| G.2.1 | General requirements | No such relay provided within the equipment. | N/A |
| G.2.2 | Overload test | | N/A |
| G.2.3 | Relay controlling connectors supply power | | N/A |
| G.2.4 | Mains relay, modified as stated in G.2 | | N/A |
| G.3 | Protection Devices | | N/A |
| G.3.1 | Thermal cut-offs | No thermal cut-off provided within the equipment. | N/A |
| G.3.1.1a) &b) | Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b) | | N/A |
| G.3.1.1c) | Thermal cut-outs tested as part of the equipment as indicated in c) | | N/A |
| G.3.1.2 | Thermal cut-off connections maintained and secure | | N/A |
| G.3.2 | Thermal links | | N/A |
| G.3.2.1a) | Thermal links separately tested with IEC 60691 | No thermal link provided within the equipment. | N/A |
| G.3.2.1b) | Thermal links tested as part of the equipment | | N/A |
| | Aging hours (H) | | — |
| | Single Fault Condition | | — |
| | Test Voltage (V) and Insulation Resistance (Ω) ... | | — |
| G.3.3 | PTC Thermistors | Approved PTC Thermistors used | P |
| G.3.4 | Overcurrent protection devices | | N/A |
| G.3.5 | Safeguards components not mentioned in G.3.1 to G.3.5 | | N/A |
| G.3.5.1 | Non-resettable devices suitably rated and marking provided | No such component. See only below for NTC. | N/A |

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|--------------|--|--|---------|
| Clause | Requirement-Test | Result-Remark | Verdict |
| G.3.5.2 | Single faults conditions | | N/A |
| G.4 | Connectors | | N/A |
| G.4.1 | Spacings | Not directly connected to mains | N/A |
| G.4.2 | Mains connector configuration | | N/A |
| G.4.3 | Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely | No such connector. Only USB for connection for charging. | N/A |
| G.5 | Wound Components | | N/A |
| G.5.1 | Wire insulation in wound components | No Wound Components | N/A |
| G.5.1.2 a) | Two wires in contact inside wound component, angle between 45° and 90° | | N/A |
| G.5.1.2 b) | Construction subject to routine testing | | N/A |
| G.5.2 | Endurance test on wound components | | N/A |
| G.5.2.1 | General test requirements | | N/A |
| G.5.2.2 | Heat run test | | N/A |
| | Time (s) | | — |
| | Temperature (°C)..... | | — |
| G.5.2.3 | Wound Components supplied by mains | | N/A |
| G.5.3 | Transformers | | N/A |
| G.5.3.1 | Requirements applied (IEC61204-7, IEC61558-1/-2, and/or IEC62368-1) | No Transformers | N/A |
| | Position..... | | — |
| | Method of protection | | — |
| G.5.3.2 | Insulation | | N/A |
| | Protection from displacement of windings | | — |
| G.5.3.3 | Overload test | | N/A |
| G.5.3.3.1 | Test conditions | | N/A |
| G.5.3.3.2 | Winding Temperatures testing in the unit | | N/A |
| G.5.3.3.3 | Winding Temperatures - Alternative test method | | N/A |
| G.5.4 | Motors | | N/A |
| G.5.4.1 | General requirements | No motors used. | N/A |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|------------|--|-------------------------|---------|
| | Position | | — |
| G.5.4.2 | Test conditions | | N/A |
| G.5.4.3 | Running overload test | | N/A |
| G.5.4.4 | Locked-rotor overload test | | N/A |
| | Test duration (days) | | — |
| G.5.4.5 | Running overload test for d.c. motors in secondary circuits | | N/A |
| G.5.4.5.2 | Tested in the unit | | N/A |
| | Electric strength test (V) | | — |
| G.5.4.5.3 | Tested on the Bench - Alternative test method; test time (h) | | N/A |
| | Electric strength test (V) | | — |
| G.5.4.6 | Locked-rotor overload test for d.c. motors in secondary circuits | | N/A |
| G.5.4.6.2 | Tested in the unit | | N/A |
| | Maximum Temperature | | N/A |
| | Electric strength test (V) | | N/A |
| G.5.4.6.3 | Tested on the bench - Alternative test method; test time (h) | | N/A |
| | Electric strength test (V) | | N/A |
| G.5.4.7 | Motors with capacitors | | N/A |
| G.5.4.8 | Three-phase motors | | N/A |
| G.5.4.9 | Series motors | | N/A |
| | Operating voltage | | — |
| G.6 | Wire Insulation | | N/A |
| G.6.1 | General | No Wire Insulation | N/A |
| G.6.2 | Solvent-based enamel wiring insulation | | N/A |
| G.7 | Mains supply cords | | N/A |
| G.7.1 | General requirements | No mains cord provided. | N/A |
| | Type..... | | — |
| | Rated current (A)..... | | — |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|------------|---|--|---------|
| | Cross-sectional area (mm ²), (AWG).....: | | — |
| G.7.2 | Compliance and test method | | N/A |
| G.7.3 | Cord anchorages and strain relief for non-detachable power supply cords | | N/A |
| G.7.3.2 | Cord strain relief | | N/A |
| G.7.3.2.1 | Requirements | | N/A |
| | Strain relief test force (N) | | — |
| G.7.3.2.2 | Strain relief mechanism failure | | N/A |
| G.7.3.2.3 | Cord sheath or jacket position, distance (mm)....: | | — |
| G.7.3.2.4 | Strain relief comprised of polymeric material | | N/A |
| G.7.4 | Cord Entry | | N/A |
| G.7.5 | Non-detachable cord bend protection | | N/A |
| G.7.5.1 | Requirements | | N/A |
| G.7.5.2 | Mass (g) | | — |
| | Diameter (m) | | — |
| | Temperature (°C).....: | | — |
| G.7.6 | Supply wiring space | | N/A |
| G.7.6.2 | Stranded wire | | N/A |
| G.7.6.2.1 | Test with 8 mm strand | | N/A |
| G.8 | Varistors | | N/A |
| G.8.1 | General requirements | | N/A |
| G.8.2 | Safeguard against shock | | N/A |
| G.8.3 | Safeguard against fire | | N/A |
| G.8.3.2 | Varistor overload test.....: | | N/A |
| G.8.3.3 | Temporary overvoltage.....: | | N/A |
| G.9 | Integrated Circuit (IC) Current Limiters | | N/A |
| G.9.1 a) | Manufacturer defines limit at max. 5A. | No IC current limiter provided within the equipment. | N/A |
| G.9.1 b) | Limiters do not have manual operator or reset | | N/A |
| G.9.1 c) | Supply source does not exceed 250 VA | | — |

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|-------------|---|---|---------|
| Clause | Requirement-Test | Result-Remark | Verdict |
| G.9.1 d) | IC limiter output current (max. 5A) | | — |
| G.9.1 e) | Manufacturers' defined drift | | — |
| G.9.2 | Test Program 1 | | N/A |
| G.9.3 | Test Program 2 | | N/A |
| G.9.4 | Test Program 3 | | N/A |
| G.10 | Resistors | | N/A |
| G.10.1 | General requirements | No such resistors | N/A |
| G.10.2 | Resistor test | | N/A |
| G.10.3 | Test for resistors serving as safeguards between the mains and an external circuit consisting of a coaxial cable | No such resistors | N/A |
| G.10.3.1 | General requirements | | N/A |
| G.10.3.2 | Voltage surge test | | N/A |
| G.10.3.3 | Impulse test | | N/A |
| G.11 | Capacitor and RC units | | N/A |
| G.11.1 | General requirements | No such Capacitor and RC units | N/A |
| G.11.2 | Conditioning of capacitors and RC units | | N/A |
| G.11.3 | Rules for selecting capacitors | | N/A |
| G.12 | Optocouplers | | N/A |
| | Optocouplers comply with IEC 60747-5-5:2007 Spacing or Electric Strength Test (specify option and test results) | No such Optocouplers | N/A |
| | Type test voltage Vini, a | | — |
| | Routine test voltage, Vini,b | | — |
| G.13 | Printed boards | | P |
| G.13.1 | General requirements | See the following details. | P |
| G.13.2 | Uncoated printed boards | Only need to comply with functional insulation, see annex B.4.4 | P |
| G.13.3 | Coated printed boards | | N/A |
| G.13.4 | Insulation between conductors on the same inner surface | | N/A |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|-------------|--|--|---------|
| | Compliance with cemented joint requirements (Specify construction).....: | | — |
| G.13.5 | Insulation between conductors on different surfaces | | N/A |
| | Distance through insulation.....: | | N/A |
| | Number of insulation layers (pcs) | | — |
| G.13.6 | Tests on coated printed boards | | N/A |
| G.13.6.1 | Sample preparation and preliminary inspection | | N/A |
| G.13.6.2a) | Thermal conditioning | | N/A |
| G.13.6.2b) | Electric strength test | | N/A |
| G.13.6.2c) | Abrasion resistance test | | N/A |
| G.14 | Coating on components terminals | | N/A |
| G.14.1 | Requirements | No coating on component terminals considered to affect creepage or clearances. | N/A |
| G.15 | Liquid filled components | | N/A |
| G.15.1 | General requirements | No such device provided within the equipment. | N/A |
| G.15.2 | Requirements | | N/A |
| G.15.3 | Compliance and test methods | | N/A |
| G.15.3.1 | Hydrostatic pressure test | | N/A |
| G.15.3.2 | Creep resistance test | | N/A |
| G.15.3.3 | Tubing and fittings compatibility test | | N/A |
| G.15.3.4 | Vibration test | | N/A |
| G.15.3.5 | Thermal cycling test | | N/A |
| G.15.3.6 | Force test | | N/A |
| G.15.4 | Compliance | | N/A |
| G.16 | IC including capacitor discharge function (ICX) | | N/A |
| a) | Humidity treatment in accordance with sc5.4.8 – 120 hours | | N/A |
| b) | Impulse test using circuit 2 with U_c = to transient voltage | | N/A |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|--------|---|---------------|---------|
| C1) | Application of ac voltage at 110% of rated voltage for 2.5 minutes | | N/A |
| C2) | Test voltage | | — |
| D1) | 10,000 cycles on and off using capacitor with smallest capacitance resistor with largest resistance specified by manufacturer | | N/A |
| D2) | Capacitance | | — |
| D3) | Resistance | | — |

| H | CRITERIA FOR TELEPHONE RINGING SIGNALS | | N/A |
|---------|---|--|-----|
| H.1 | General | | N/A |
| H.2 | Method A | | N/A |
| H.3 | Method B | | N/A |
| H.3.1 | Ringing signal | | N/A |
| H.3.1.1 | Frequency (Hz) | | — |
| H.3.1.2 | Voltage (V) | | — |
| H.3.1.3 | Cadence; time (s) and voltage (V) | | — |
| H.3.1.4 | Single fault current (mA): | | — |
| H.3.2 | Tripping device and monitoring voltage | | N/A |
| H.3.2.1 | Conditions for use of a tripping device or a monitoring voltage complied with | | N/A |
| H.3.2.2 | Tripping device | | N/A |
| H.3.2.3 | Monitoring voltage (V) | | — |

| J | INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION | | N/A |
|---|--|--|-----|
| | General requirements | | N/A |

| K | SAFETY INTERLOCKS | | N/A |
|-----|----------------------|--|-----|
| K.1 | General requirements | | N/A |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|--------|------------------|---------------|---------|
|--------|------------------|---------------|---------|

| | | | |
|-------|---|--|-----|
| K.2 | Components of safety interlock safeguard mechanism | | N/A |
| K.3 | Inadvertent change of operating mode | | N/A |
| K.4 | Interlock safeguard override | | N/A |
| K.5 | Fail-safe | | N/A |
| | Compliance | | N/A |
| K.6 | Mechanically operated safety interlocks | | N/A |
| K.6.1 | Endurance requirement | | N/A |
| K.6.2 | Compliance and Test method | | N/A |
| K.7 | Interlock circuit isolation | | N/A |
| K.7.1 | Separation distance for contact gaps & interlock circuit elements (type and circuit location) | | N/A |
| K.7.2 | Overload test, Current (A)..... | | N/A |
| K.7.3 | Endurance test | | N/A |
| K.7.4 | Electric strength test | | N/A |

| | | | |
|----------|---------------------------------|--|-----|
| L | DISCONNECT DEVICES | | N/A |
| L.1 | General requirements | | N/A |
| L.2 | Permanently connected equipment | | N/A |
| L.3 | Parts that remain energized | | N/A |
| L.4 | Single phase equipment | | N/A |
| L.5 | Three-phase equipment | | N/A |
| L.6 | Switches as disconnect devices | | N/A |
| L.7 | Plugs as disconnect devices | | N/A |
| L.8 | Multiple power sources | | N/A |

| | | | |
|----------|---|---|---|
| M | EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS | | P |
| M.1 | General requirements | | P |
| M.2 | Safety of batteries and their cells | UL1642/ IEC 60086-4 approved battery used | P |

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|-------------|--|---|---------|
| Clause | Requirement-Test | Result-Remark | Verdict |
| M.2.1 | Requirements | | P |
| M.2.2 | Compliance and test method (identify method) .. : | | P |
| M.3 | Protection circuits | | P |
| M.3.1 | Requirements | | P |
| M.3.2 | Tests | | P |
| | - Overcharging of a rechargeable battery | Non-rechargeable batteries | N/A |
| | - Unintentional charging of a non-rechargeable battery | | P |
| | - Reverse charging of a rechargeable battery | | N/A |
| | - Excessive discharging rate for any battery | (See appended Tables and Annex M) | P |
| M.3.3 | Compliance : | No chemical leakage, no spillage of liquid, no explosion of the battery, no emission of flame or expulsion of molten metal. | P |
| M.4 | Additional safeguards for equipment containing secondary lithium battery | | N/A |
| M.4.1 | General | | N/A |
| M.4.2 | Charging safeguards | | N/A |
| M.4.2.1 | Charging operating limits | | N/A |
| M.4.2.2a) | Charging voltage, current and temperature | | — |
| M.4.2.2 b) | Single faults in charging circuitry | | — |
| M.4.3 | Fire Enclosure | | N/A |
| M.4.4 | Endurance of equipment containing a secondary lithium battery | | N/A |
| M.4.4.2 | Preparation | | N/A |
| M.4.4.3 | Drop and charge/discharge function tests | | N/A |
| | Drop | | N/A |
| | Charge | | N/A |
| | Discharge | | N/A |
| M.4.4.4 | Charge-discharge cycle test | | N/A |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|---------|--|---|---------|
| M.4.4.5 | Result of charge-discharge cycle test | | N/A |
| M.5 | Risk of burn due to short circuit during carrying | | N/A |
| M.5.1 | Requirement | | N/A |
| M.5.2 | Compliance and Test Method (Test of P.2.3) | | N/A |
| M.6 | Prevention of short circuits and protection from other effects of electric current | | P |
| M.6.1 | Short circuits | UL1642/ IEC 60086-4 approved battery used. | P |
| M.6.1.1 | General requirements | | N/A |
| M.6.1.2 | Test method to simulate an internal fault | | N/A |
| M.6.1.3 | Compliance (Specify M.6.1.2 or alternative method) : : | | N/A |
| M.6.2 | Leakage current (mA) : : | | N/A |
| M.7 | Risk of explosion from lead acid and NiCd batteries | | N/A |
| M.7.1 | Ventilation preventing explosive gas concentration | | N/A |
| M.7.2 | Compliance and test method | | N/A |
| M.8 | Protection against internal ignition from external spark sources of lead acid batteries | | N/A |
| M.8.1 | General requirements | | N/A |
| M.8.2 | Test method | | N/A |
| M.8.2.1 | General requirements | | N/A |
| M.8.2.2 | Estimation of hypothetical volume V_z (m ³ /s)..... : | | — |
| M.8.2.3 | Correction factors..... : | | — |
| M.8.2.4 | Calculation of distance d (mm) : : | | — |
| M.9 | Preventing electrolyte spillage | | N/A |
| M.9.1 | Protection from electrolyte spillage | | N/A |
| M.9.2 | Tray for preventing electrolyte spillage | | N/A |
| M.10 | Instructions to prevent reasonably foreseeable misuse (Determination of compliance: inspection, data review; or abnormal testing) : : | Provided the instructions include battery charging, storage and transportation, and disposal and recycling. | P |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|--------|------------------|---------------|---------|
|--------|------------------|---------------|---------|

| | | | |
|----------|-----------------------------------|----------------------|-----|
| N | ELECTROCHEMICAL POTENTIALS | | N/A |
| | Metal(s) used : | Class III equipment. | — |

| | | | |
|----------|---|----------------------|-----|
| O | MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES | | N/A |
| | Figures O.1 to O.20 of this Annex applied : | Class III equipment. | — |

| | | | |
|----------|---|---------------------------|-----|
| P | SAFEGUARDS AGAINST ENTRY OF FOREIGN OBJECTS AND SPILLAGE OF INTERNAL LIQUIDS | | N/A |
| P.1 | General requirements | No openings of enclosure. | N/A |
| P.2.2 | Safeguards against entry of foreign object | | N/A |
| | Location and Dimensions (mm) : | | — |
| P.2.3 | Safeguard against the consequences of entry of foreign object | | N/A |
| P.2.3.1 | Safeguards against the entry of a foreign object | | N/A |
| | Openings in transportable equipment | | N/A |
| | Transportable equipment with metalized plastic parts : | | N/A |
| P.2.3.2 | Openings in transportable equipment in relation to metallized parts of a barrier or enclosure (identification of supplementary safeguard) : | | N/A |
| P.3 | Safeguards against spillage of internal liquids | | N/A |
| P.3.1 | General requirements | | N/A |
| P.3.2 | Determination of spillage consequences | | N/A |
| P.3.3 | Spillage safeguards | | N/A |
| P.3.4 | Safeguards effectiveness | | N/A |
| P.4 | Metallized coatings and adhesive securing parts | | N/A |
| P.4.2 a) | Conditioning testing | | N/A |
| | Tc (°C) | | — |
| | Tr (°C) | | — |
| | Ta (°C) | | — |
| P.4.2 b) | Abrasion testing | | N/A |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|--------|------------------|---------------|---------|
|--------|------------------|---------------|---------|

| | | | |
|----------|-----------------------------------|--|-----|
| P.4.2 c) | Mechanical strength testing | | N/A |
|----------|-----------------------------------|--|-----|

| Q | CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING | | N/A |
|----------|---|---------------|-----|
| Q.1 | Limited power sources | | N/A |
| Q.1.1 a) | Inherently limited output | | N/A |
| Q.1.1 b) | Impedance limited output | | N/A |
| | - Regulating network limited output under normal operating and simulated single fault condition | | N/A |
| Q.1.1 c) | Overcurrent protective device limited output | | N/A |
| Q.1.1 d) | IC current limiter complying with G.9 | | N/A |
| Q.1.2 | Compliance and test method | See table Q.1 | N/A |
| Q.2 | Test for external circuits – paired conductor cable | | N/A |
| | Maximum output current (A) | | — |
| | Current limiting method..... | | — |

| R | LIMITED SHORT CIRCUIT TEST | | N/A |
|-----|--|------------------------|-----|
| R.1 | General requirements | No such consideration. | N/A |
| R.2 | Determination of the overcurrent protective device and circuit | | N/A |
| R.3 | Test method Supply voltage (V) and short-circuit current (A)). | | N/A |

| S | TESTS FOR RESISTANCE TO HEAT AND FIRE | | N/A |
|-----|--|---------------------|-----|
| S.1 | Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W | Class III equipment | N/A |
| | Samples, material | | — |
| | Wall thickness (mm)..... | | — |
| | Conditioning (°C)..... | | — |
| | Test flame according to IEC 60695-11-5 with conditions as set out | | N/A |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|--------|--|---------------|---------|
| | - Material not consumed completely | | N/A |
| | - Material extinguishes within 30s | | N/A |
| | - No burning of layer or wrapping tissue | | N/A |
| S.2 | Flammability test for fire enclosure and fire barrier integrity | | N/A |
| | Samples, material | | — |
| | Wall thickness (mm)..... | | — |
| | Conditioning (°C)..... | | — |
| | Test flame according to IEC 60695-11-5 with conditions as set out | | N/A |
| | Test specimen does not show any additional hole | | N/A |
| S.3 | Flammability test for the bottom of a fire enclosure | | N/A |
| | Samples, material | | — |
| | Wall thickness (mm)..... | | — |
| | Cheesecloth did not ignite | | N/A |
| S.4 | Flammability classification of materials | | N/A |
| S.5 | Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W | | N/A |
| | Samples, material | | — |
| | Wall thickness (mm)..... | | — |
| | Conditioning (test condition), (°C)..... | | — |
| | Test flame according to IEC 60695-11-20 with conditions as set out | | N/A |
| | After every test specimen was not consumed completely | | N/A |
| | After fifth flame application, flame extinguished within 1 min | | N/A |

| | | |
|----------|----------------------------------|----------|
| T | MECHANICAL STRENGTH TESTS | P |
| T.1 | General requirements | P |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|--------|--------------------------------------|---|---------|
| T.2 | Steady force test, 10 N | | N/A |
| T.3 | Steady force test, 30 N | | N/A |
| T.4 | Steady force test, 100 N | (See appended table T.4) | P |
| T.5 | Steady force test, 250 N | | N/A |
| T.6 | Enclosure impact test | | N/A |
| | Fall test | | N/A |
| | Swing test | | N/A |
| T.7 | Drop test | (See appended table T.7) | P |
| T.8 | Stress relief test | (See appended table T.8) | P |
| T.9 | Impact Test (glass) | No glass used. | N/A |
| T.9.1 | General requirements | | N/A |
| T.9.2 | Impact test and compliance | | N/A |
| | Impact energy (J) | | — |
| | Height (m) | | — |
| T.10 | Glass fragmentation test | | N/A |
| T.11 | Test for telescoping or rod antennas | No such antennas provided within the equipment. | N/A |
| | Torque value (Nm) | | — |

| | | | |
|----------|---|---------------------------------------|-----|
| U | MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION | | N/A |
| U.1 | General requirements | No CRT provided within the equipment. | N/A |
| U.2 | Compliance and test method for non-intrinsically protected CRTs | See above. | N/A |
| U.3 | Protective Screen | See above. | N/A |

| | | | |
|----------|---|--|-----|
| V | DETERMINATION OF ACCESSIBLE PARTS (FINGERS, PROBES AND WEDGES) | | N/A |
| V.1 | Accessible parts of equipment | | N/A |
| V.2 | Accessible part criterion | | N/A |

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|-------------|------------------|---------------|---------|
| Clause | Requirement-Test | Result-Remark | Verdict |

ATTACHMENT TO TEST REPORT

IEC 62368-1

(AUSTRALIA / NEW ZEALAND) NATIONAL DIFFERENCES

(Audio/video, information and communication technology equipment)

Differences according to : AS/NZS 62368.1:2018

TRF template used: : IECEE OD-2020-F3, Ed. 1.1

Attachment Form No. : AU_NZ_ND_IEC62368_1D

Attachment Originator..... : JAS-ANZ

Master Attachment..... : 2021-12-21

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| | National Differences | P |
|-----------------------|--|---|
| Appendix ZZ | Variations to IEC 62368-1:2014 (ED. 2.0) for Australia and New Zealand | P |
| ZZ1 Scope | This Appendix lists the normative variations to IEC 62368-1:2014 (ED. 2.0) | P |
| ZZ2 Variations | The following modifications are required for Australian/New Zealand conditions: | P |
| 2 | <p>Add the following to the list of normative references:</p> <p>The following normative documents are referenced in Appendix ZZ:</p> <ul style="list-style-type: none"> -AS/NZS 3112, <i>Approval and test specification—Plugs and socket-outlets</i> -AS/NZS 3123, <i>Approval and test specification—Plugs, socket-outlets and couplers for general industrial application</i> -AS/NZS 3191, <i>Electric flexible cords</i> -AS/NZS 60065, <i>Audio, video and similar electronic apparatus—Safety requirements (IEC 60065:2015 (ED.8.0) MOD)</i> -AS/NZS 60320.1, <i>Appliance couplers for household and similar general purposes, Part 1: General requirements (IEC 60320-1, Ed.2.1 (2007) MOD)</i> -AS/NZS 60320.2.2, <i>Appliance couplers for</i> | P |

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|-------------|--|---------------|---------|
| Clause | Requirement-Test | Result-Remark | Verdict |
| | <p><i>household and similar general purposes</i></p> <p><i>Part 2.2: Interconnection couplers for household and similar equipment (IEC 60320-2-2, Ed.2.0 (1998) MOD)</i></p> <p><i>-AS/NZS 60695.2.11, Fire hazard testing, Part 2.11: Glowing/hot wire based test methods—Glow-wire flammability test method for end-products</i></p> <p><i>-AS/NZS 60695.11.5, Fire hazard testing, Part 11.5: Test flames—Needle-flame test method—Apparatus, confirmatory test arrangement and guidance</i></p> <p><i>-AS/NZS 60695.11.10, Fire hazard testing, Part 11.10: Test flames—50 W horizontal and vertical flame test methods</i></p> <p><i>-AS/NZS 60884.1, Plugs and socket-outlets for household and similar purposes, Part 1: General requirements</i></p> <p><i>-AS/NZS 60950.1:2015, Information technology equipment—Safety, Part 1: General requirements (IEC 60950-1, Ed.2.2 (2013), MOD)</i></p> <p><i>IEC 61032:1997, Protection of persons and equipment by enclosures—Probes for verification</i></p> <p><i>-AS/NZS 61558.1:2008 (including Amendment 2:2015), Safety of Power Transformers, Power Supplies, Reactors and Similar Products, Part 1: General requirements and tests (IEC 61558-1 Ed 2.1, MOD)</i></p> <p><i>-AS/NZS 61558.2.16, Safety of transformers, reactors, power supply units and similar products for voltages up to 1 100 V, Part 2.16: Particular requirements and tests for switch mode power supply units and transformers for switch mode power supply units.</i></p> | | |
| 4.1.1 | <p>Application of requirements and acceptance of materials, components and subassemblies</p> <p>1 Replace the text 'IEC 60950-1' with 'AS/NZS 60950.1:2015'.</p> <p>2 Replace the text 'IEC 60065' with 'AS/NZS 60065'.</p> | | P |

| Clause | Requirement-Test | Result-Remark | Verdict |
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| 4.7 | Equipment for direct insertion into mains socket-outlets | | N/A |
| 4.7.2 | Requirements Delete the text of the second paragraph and replace with the following: Equipment with a plug portion, suitable for insertion into a 10 A 3-pin flat-pin socket-outlet complying with AS/NZS 3112 shall comply with the requirements in AS/NZS 3112 for equipment with integral pins for insertion into socket-outlets. | | N/A |
| 4.7.3 | Compliance Criteria Delete the first paragraph and Note 1 and Note 2 and replace with the following: Compliance is checked by inspection and, if necessary, by the tests in AS/NZS 3112. | | N/A |
| 4.8 | Delete existing clause title and replace with the following: 4.8 Products containing coin/button cell batteries | | P |
| 4.8.1 | General 1 Second dashed point, delete the text and replace with the following: – include coin/button cell batteries with a diameter of 32 mm or less. 2 After the second dashed point, insert the following Note: NOTE 1: Batteries are specified in IEC 60086-2. 3 After the third dashed point, renumber the existing Note as 'NOTE 2'. 4 Fifth dashed point, delete the word 'lithium'. | considered | P |
| 4.8.2 | Instructional Safeguard First line, delete the word 'lithium'. | considered | P |
| 4.8.3 | Construction First line, after the word 'Equipment' insert the words 'containing one or more coin/button batteries and' | considered | P |

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| Clause | Requirement-Test | Result-Remark | Verdict |
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| 4.8.5 | Compliance criteria Delete the first paragraph and <i>replace</i> with the following: <i>Compliance is checked by applying a force of 30 N +/- 1 N for 10 s to the battery compartment door/cover by a rigid test finger according to test probe 11 of IEC 61032:1997 at the most unfavourable place and in the most unfavourable direction. The force shall be applied in one direction at a time.</i> | | P |
| 5.4.10.2 | Test methods | | N/A |
| 5.4.10.2.1 | General Delete the first paragraph and <i>replace</i> with the following: In Australia only, the separation is checked by the test of both Clause 5.4.10.2.2 and Clause 5.4.10.2.3. In New Zealand, the separation is checked by the test of either Clause 5.4.10.2.2 or Clause 5.4.10.2.3. | | N/A |
| Table 29 | Replace the table with the following: | | N/A |
| Parts | | Impulse test New Zealand Australia Steady state test New Zealand Australia | |
| Parts indicated in Clause 5.4.10.1 a) ^a | | 2.5 kV 10/700 µs 7.0 kV for hand-held telephones and headsets, 2.5 kV for other equipment. 10/700 µs | 1.5 kV 3 kV |
| Parts indicated in Clause 5.4.10.1 b) and c) ^b | | 1.5 kV 10/700 µs ^c | 1.0 kV 1.5 kV |
| ^a Surge suppressors shall not be removed. ^b Surge suppressors may be removed, provided that such devices pass the impulse test of Clause 5.4.10.2.2 when tested as components outside the equipment. ^c During this test, it is allowed for a surge suppressor to operate and for a sparkover to occur in a GDT. | | | |

| Clause | Requirement-Test | Result-Remark | Verdict |
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| 5.4.10.2.2 | After the first paragraph, <i>insert</i> new Notes 201 and 202 as follows: NOTE 201 For Australia, the 7 kV impulse simulates lightning surges on typical rural and semi-rural network lines. NOTE 202 For Australia, the value of 2.5 kV for Clause 5.4.10.1 a) was chosen to ensure the adequacy of the insulation concerned and does not necessarily simulate likely overvoltages. | | N/A |
| 5.4.10.2.3 | After the first paragraph, <i>insert</i> new Notes 201 and 202 as follows: NOTE 201 For Australia, where there are capacitors across the insulation under test, it is recommended that d.c. test voltages are used. NOTE 202 The 3 kV and 1.5 kV values for Australia have been determined considering the low frequency induced voltages from the power supply distribution system. | | N/A |
| 6 | Electrically-caused fire | | N/A |
| 6.1 | General After the first paragraph, <i>insert</i> the following new paragraph: Alternatively, the requirements of Clauses 6.2 to 6.5.2 are considered to be fulfilled if the equipment complies with the requirements of Clause 6.202 | | N/A |
| 6.6 | After Clause 6.6, <i>add</i> the new Clauses 6.201 and 6.202 as follows: 6.201 External power supplies, docking stations and other similar devices and 6.202 Resistance to fire—Alternative tests (see special national conditions) | | N/A |
| 8.5.4 | Special categories of equipment comprising moving parts | | N/A |
| 8.5.4.1 | Large data storage equipment In the first dashed row and the second dashed rows <i>replace</i> 'IEC 60950-1:2005' with 'AS/NZS 60950.1:2015'. | | N/A |
| 8.6 | Stability of equipment | | N/A |

| Clause | Requirement-Test | Result-Remark | Verdict |
|----------------------------------|--|---------------|---------|
| 8.6.1 and Table 36 | Requirements 1. Table 36, <i>insert</i> Footnote c at the end of the 'Glass slide' heading, and <i>add</i> a new Footnote c after the text of Footnote b in the last row of Table 36 as follows: ^c The glass slide test is not applicable to floor standing equipment, even though the equipment may have controls or a display. 2. Table 36, fifth row, <i>insert</i> ²⁰¹ at the end of 'No stability requirements' 3. Table 36, ninth row, <i>insert</i> ²⁰¹ at the end of 'No stability requirements' 4. Table 36, <i>add</i> the following new footnote: ²⁰¹ MS2 and MS3 television sets and display devices, designed only for fixing to a wall, ceiling or equipment rack, are not subjected to stability requirements only if the instructional safeguard of Clause 8.6.1.201 is provided. Otherwise, the glass slide requirements of Clause 8.6.4 and horizontal force requirements of Clause 8.6.5 apply. 5. Second paragraph beneath Table 36, <i>delete</i> the words 'MS2 and MS3 television sets' and <i>replace</i> with 'MS2 and MS3 television sets and display devices' | | N/A |
| 8.6.1 | After Clause 8.6.1 <i>add</i> the following new clauses: 8.6.1.201 Instructional safeguard for fixed-mount television sets (see special national conditions) | | N/A |
| Annex F Paragraph F.3.5.1 | Mains appliance outlet and socket-outlet markings <i>Replace</i> 'IEC 60320-2-2' with 'AS/NZS 60320.2.2'. | | N/A |
| Annex G Paragraph G.4.2 | Mains connectors 1 In the second line <i>insert</i> 'or AS/NZS 3123' after 'IEC 60906-1'. 2 In the second line <i>insert</i> 'or AS/NZS 60320 series' after 'IEC 60320 series' 3 <i>Add</i> the following new paragraph: 10 A or 15 A 250 V flat pin plugs for the connection of equipment to mains-powered socket-outlets for household or similar general use shall comply with AS/NZS 3112 or AS/NZS 60884.1. | | N/A |

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| Clause | Requirement-Test | Result-Remark | Verdict |
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| Paragraph G.5.3.1 | Transformers, General 1 In the third dashed point <i>replace</i> 'IEC 61558-1 and the relevant parts of IEC 61558-2' with 'AS/NZS 61558-1 and the relevant parts of AS/NZS 61558.2' 2 In the fourth dashed point <i>replace</i> 'IEC 61558-2-16' with 'AS/NZS 61558.2.16'. | Replaced | N/A |
| Paragraph G.7.1 | Mains supply cords, General In the fourth dashed paragraph, <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1' | No such cord provided | N/A |
| Table G.5 | Sizes of conductors 1 In the second row, first column, <i>delete</i> '6' and <i>replace</i> with '7.5' 2 In the second row, second column, <i>delete</i> '0,75' and <i>replace</i> with '0.75 ^b 3 <i>Delete</i> Note 1. 4 <i>Replace</i> 'NOTE 2' with 'NOTE:'. 5 <i>Delete</i> the text of 'Footnote b' and <i>replace</i> with the following: ^b This nominal cross-sectional area is only allowed for Class II appliances if the length of the power supply cord, measured between the point where the cord, or cord guard, enters the appliance, and the entry to the plug does not exceed 2 m (0.5 mm ² three-core supply flexible cords are not permitted; see AS/NZS 3191). 6 In Footnote c <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1' 7 In Footnote d <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1' | | N/A |

| Clause | Requirement-Test | Result-Remark | Verdict |
|--|--|---------------|---------|
| Annex M Paragraph M.3.2 | Protection circuits for batteries provided within the equipment, Test method After the first dashed point <i>add</i> the following Note: NOTE 201: In cases where the voltage source is provided by power from an unassociated power source, consideration should be given to the effects of possible single fault conditions in the unassociated equipment. If the power source is unknown then it should be assumed that the maximum limit of SELV may be applied to the source input under assumed single fault conditions in the source when assessing the charging circuit in the equipment under test. | | N/A |
| | | | |
| | Special national conditions (if any) | | N/A |
| 6.201 | External power supplies, docking stations and other similar devices For external power supplies, docking stations and other similar devices, during and after abnormal operating conditions and during single fault conditions the output voltage— – at all ES1 outlets or connectors shall not increase by more than 10% of its rated output voltage under normal operating condition; and – of a USB outlet or connector shall not increase by more than 3 V or 10% of its rated output voltage under normal operating conditions, whichever is higher. For equipment with multiple rated output voltages, the requirements apply with the equipment configured for each rated output voltage in turn. NOTE: This is intended to reduce the possibility of battery fire or explosion in attached equipment or accessories when charging secondary lithium batteries. <i>Compliance shall be checked by measurement, taking into account the abnormal operating conditions of Annex B.3 and the simulated single-fault conditions of Annex B.4</i> | | N/A |

| Clause | Requirement-Test | Result-Remark | Verdict |
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| 6.202 | Resistance to fire—Alternative tests | | N/A |
| 6.202.1 | <p>General</p> <p>Parts of non-metallic material shall be resistant to ignition and spread of fire.</p> <p>This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames from inside the equipment, or the following:</p> <p>a) Components that are contained in an enclosure having a flammability category of V-0 according to AS/NZS 60695.11.10 and having openings only for the connecting wires filling the openings completely, and for ventilation not exceeding 1 mm in width regardless of length.</p> <p>b) The following parts which would contribute negligible fuel to a fire:</p> <ul style="list-style-type: none"> – small mechanical parts, the mass of which does not exceed 4 g, such as mounting parts, gears, cams, belts and bearings; – small electrical components, such as capacitors with a volume not exceeding 1 750 mm³, integrated circuits, transistors and optocoupler packages, if these components are mounted on material of flammability category V-1, or better, according to AS/NZS 60695.11.10. <p>NOTE: In considering how to minimize propagation of fire and what 'small parts' are, account should be taken of the cumulative effect of small parts adjacent to each other for the possible effect of propagating the fire from one part to another.</p> | | N/A |

| Clause | Requirement-Test | Result-Remark | Verdict |
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| | <p><i>Compliance shall be checked by the tests of Clauses 6.202.2, 6.202.3 and 6.202.4.</i></p> <p>For the base material of printed boards, compliance shall be checked by the test of Clause 6.202.5.</p> <p>The tests shall be carried out on parts of non-metallic material which have been removed from the equipment. When the glow-wire test is carried out, the parts shall be placed in the same orientation as they would be in normal use.</p> <p>These tests are not carried out on internal wiring.</p> | | N/A |
| 6.202.2 | <p>Testing of non-metallic materials</p> <p>Parts of non-metallic material shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 550°C.</p> <p>Parts for which the glow-wire test cannot be carried out, such as those made of soft or foamy material, shall meet the requirements specified in ISO 9772 for category FH-3 material. The glow-wire test shall be not carried out on parts of material classified at least FH-3 according to ISO 9772 provided that the relevant part is not thinner than the sample tested.</p> | | N/A |
| 6.202.3 | <p>Testing of insulating materials</p> <p>Parts of insulating material supporting Potential Ignition Sources shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 750°C.</p> <p>The test shall be also carried out on other parts of insulating material which are within a distance of 3 mm of the connection.</p> <p>NOTE: Contacts in components such as switch contacts are considered to be connections</p> | | N/A |
| | <p>For parts which withstand the glow-wire test but produce a flame, other parts above the connection within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm shall be subjected to the needle-flame test.</p> <p>However, parts shielded by a barrier which meets the needle-flame test need not be tested</p> | | N/A |
| | The needle-flame test shall be made in accordance | | N/A |

| Clause | Requirement-Test | Result-Remark | Verdict |
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| | with AS/NZS 60695.11.5 with the following modifications: | | | |
| | Clause of AS/NZS 60695.11.5 | Change | | |
| | 9 Test procedure | | | |
| | 9.2 Application of needle-flame | <p><i>Delete</i> the first and second paragraphs and <i>replace</i> with the following:</p> <p>The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of Figure 1. If possible the flame shall be applied at least 10 mm from a corner.</p> <p>The duration of application of the test flame shall be 30 s ± 1 s.</p> | | |
| | 9.3 Number of test specimens | <p><i>Replace</i> with the following:</p> <p>The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall withstand the test.</p> | | |
| | 11 Evaluation of test | <i>Replace</i> with the following: | | |

| Clause | Requirement-Test | Result-Remark | Verdict |
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| | <p>results</p> <p>The duration of burning (tb) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s.</p> <p>The needle-flame test shall not be carried out on parts of material classified as V-0 or V-1 according to AS/NZS 60695.11.10, provided that the relevant part is not thinner than the sample tested.</p> | | |
| 6.202.4 | <p>Testing in the event of non-extinguishing material</p> <p>If parts, other than enclosures, do not withstand the glow wire tests of Clause 6.202.3, by failure to extinguish within 30 s after the removal of the glow wire tip, the needle-flame test detailed in Clause 6.202.3 shall be made on all parts of non-metallic material which are within a distance of 50 mm or which are likely to be impinged upon by flame during the tests of Clause 6.202.3. Parts shielded by a separate barrier which meets the needle-flame test need not be tested.</p> <p>NOTE 1: If the enclosure does not withstand the glow-wire test the equipment is considered to have failed to meet the requirements of Clause 6.202 without the need for consequential testing.</p> <p>NOTE 2: If other parts do not withstand the glow-wire test due to ignition of the tissue paper and if this indicates that burning or glowing particles can fall onto an external surface underneath the equipment, the equipment is considered to have failed to meet the requirements of Clause 6.202 without the need for consequential testing.</p> <p>NOTE 3: Parts likely to be impinged upon by the flame are considered to be those within the envelope of a vertical cylinder having a radius of 10 mm and a height equal to the height of the flame, positioned above the point of the material supporting, in contact with, or in close proximity to, connections.</p> | | N/A |
| 6.202.5 | <p>Testing of printed boards</p> <p>The base material of printed boards shall be subjected to the needle-flame test of Clause</p> | | N/A |

| Clause | Requirement-Test | Result-Remark | Verdict |
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| | <p>6.202.3. The flame shall be applied to the edge of the board where the heat sink effect is lowest when the board is positioned as in normal use. The flame shall not be applied to an edge, consisting of broken perforations, unless the edge is less than 3 mm from a potential ignition source.</p> <p>The test is not carried out if—</p> <ul style="list-style-type: none"> – the printed board does not carry any potential ignition source; – the base material of printed boards, on which the available apparent power at a connection exceeds 15 VA operating at a voltage exceeding 50 V and equal or less than 400 V (peak) a.c. or d.c. under normal operating conditions, is of flammability category V-1 or better according to AS/NZS 60695.11.10, or the printed boards are protected by an enclosure meeting the flammability category V-0 according to AS/NZS 60695.11.10, or made of metal, having openings only for connecting wires which fill the openings completely; or – the base material of printed boards, on which the available equipment power at a connection exceeds 15 VA operating at a voltage exceeding 400 V (peak) a.c. or d.c. under normal operating conditions, and base material of printed boards supporting spark gaps which provides protection against overvoltages, is of flammability category V-0 according to AS/NZS 60695.11.10 or the printed boards are contained in a metal enclosure, having openings only for connecting wires which fill the openings completely. <p><i>Conformance shall be determined using the smallest thickness of the material.</i></p> <p>NOTE: Available apparent power is the maximum apparent power which can be drawn from the supplying circuit through a resistive load whose value is chosen to maximize the apparent power for more than 2 min when the circuit supplied is disconnected.</p> | | |
| 6.202.6 | <p>For open circuit voltages greater than 4 kV</p> <p>Potential ignition sources with open circuit voltages exceeding 4 kV (peak) a.c. or d.c. under normal</p> | | N/A |

| Clause | Requirement-Test | Result-Remark | Verdict |
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| | operating conditions shall be contained in a FIRE ENCLOSURE which shall comply with flammability category V-1 or better according to AS/NZS 60695.11.10. | | |
| 8.6.1.201 | <p>8.6.1.201 Instructional safeguard for fixed-mount television sets</p> <p>MS2 and MS3 television sets and display devices designed only for fixed mounting to a wall of ceiling or equipment rack shall, where required in Table 36, footnote 201, have an instructional safeguard in accordance with Clause F.5 which may be on the equipment or included in the installation instructions or equivalent document accompanying the equipment.</p> <p>The elements of the instructional safeguard shall be as follows:</p> <ul style="list-style-type: none"> – element 1a: not available; – element 2: ‘Stability Hazard’ or equivalent wording; – element 3: ‘The television set may fall, causing serious personal injury or death’ or equivalent text; – element 4: the following or equivalent text: <p>To prevent injury, this television set must be securely attached to the floor/wall in accordance with the installation instructions</p> | | N/A |
| 8.6.1.202 | <p>Restraining device</p> <p>MS2 and MS3 television sets and display devices that are not solely fixed-mounted should be provided with a restraining device such as a fixing point to facilitate restraining the equipment from toppling forward. The restraining device shall be capable of withstanding a pull of 100 N in all directions without damage.</p> <p>Where a restraining device is provided, instructions shall be provided in the instructions for installation or instructions for use to ensure correct and safe installation.</p> | | N/A |

| Clause | Requirement-Test | Result-Remark | Verdict |
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| 4.1.2 | | TABLE: List of critical components | | | | P |
|----------------------------|---|------------------------------------|--|---------------------------------|--|---|
| Object/part No. | Manufacturer/ trademark | Type/model | Technical data | Standard (Edition / year) | Mark(s) of conformity ¹⁾ | |
| PCB | KINGBOARD L AMINATES HOLDINGS LTD | KB-6160A | V-0, 130°C | UL 746 UL 94 | UL E123995 | |
| Plastic enclosure | DONGGUAN HONOUR E P LTD | H1018 | HB, 60°C, min.thickness. 1.71mm | UL 746 UL 94 | UL E341783 | |
| Plastic base | LG CHEMICAL LTD | LUPOY GN-5001RF(T) | V-0, 60°C, min.thickness. 1.71mm | UL 746 UL 94 | UL E67171 | |
| Button Battery | Panasonic Corporation | CR2450 | Rated:3V, 620mAh | IEC 60086-4 | CB by DEKRA | |
| Supplementary information: | | | | | | |

| Clause | Requirement-Test | Result-Remark | Verdict |
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| 4.8.4, 4.8.5 | TABLE: Lithium coin/button cell batteries mechanical tests | | | P |
| (The following mechanical tests are conducted in the sequence noted.) | | | | |
| 4.8.4.2 | TABLE: Stress relief test | | | — |
| Part | | Material | Oven Temperature (°C) | Comments |
| Whole enclosure | | Plastic | 70 | No hazard, no damage |
| 4.8.4.3 | TABLE: Battery replacement test | | | — |
| Battery part no. : | | | — | |
| Battery Installation/withdrawal | | Battery Installation/Removal Cycle | | Comments |
| | | 1 | | No hazard, no damage |
| | | 2 | | No hazard, no damage |
| | | 3 | | No hazard, no damage |
| | | 4 | | No hazard, no damage |
| | | 5 | | No hazard, no damage |
| | | 6 | | No hazard, no damage |
| | | 8 | | No hazard, no damage |
| | | 9 | | No hazard, no damage |
| | | 10 | | No hazard, no damage |
| 4.8.4.4 | TABLE: Drop test | | | — |
| Impact Area | | Drop Distance | Drop No. | Observations |
| battery compartment | | 1000mm | 1 | No hazard, no damage |

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| Clause | Requirement-Test | Result-Remark | Verdict |
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| | | | |
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| battery compartment | 1000mm | 2 | No hazard, no damage |
| battery compartment | 1000mm | 3 | No hazard, no damage |

4.8.4.5 TABLE: Impact

| Impacts per surface | Surface tested | Impact energy (J) | Comments |
|---------------------|----------------|-------------------|----------------------|
| battery compartment | -- | 2 | No hazard, no damage |
| battery compartment | -- | 2 | No hazard, no damage |
| battery compartment | -- | 2 | No hazard, no damage |

4.8.4.6 TABLE: Crush test

| Test position | Surface tested | Crushing Force (N) | Duration force applied (s) |
|-----------------------------|----------------|--------------------|----------------------------|
| Top of battery compartment | -- | 330N | 10 |
| Back of battery compartment | -- | 330N | 10 |

Supplementary information:

4.8.5 TABLE: Lithium coin/button cell batteries mechanical test result

P

| Test position | Surface tested | Force (N) | Duration force applied (s) |
|---------------------|----------------|-----------|----------------------------|
| battery compartment | -- | 30 | 10 |

Supplementary information:

5.2 Table: Classification of electrical energy sources

P

5.2.2.2 – Steady State Voltage and Current conditions

| No. | Supply Voltage | Location (e.g. circuit designation) | Test conditions ¹⁾ | Parameters | | | ES Class |
|-----|----------------|-------------------------------------|-------------------------------|--------------------|--------------------|----|----------|
| | | | | U (Vrms or Vpk) | I (Apk or Arms) | Hz | |
| 1 | 3Vd.c. | All internal | Normal | 3.0Vd.c. | -- | DC | ES1 |

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| Clause | Requirement-Test | Result-Remark | Verdict |
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| | | circuits | Abnormal | -- | -- | -- | |
| | | (supply by 1* CR2450 battery) | Single fault – SC/OC | | | | |

5.2.2.3 - Capacitance Limits

| No. | Supply Voltage | Location (e.g. circuit designation) | Test conditions | Parameters | | ES Class |
|-----|----------------|-------------------------------------|-------------------------|-----------------|---------|----------|
| | | | | Capacitance, nF | Upk (V) | |
| -- | -- | -- | Normal | -- | -- | -- |
| | | | Abnormal | -- | -- | -- |
| | | | Single fault – SC/OC | -- | -- | -- |

5.2.2.4 - Single Pulses

| No. | Supply Voltage | Location (e.g. circuit designation) | Test conditions | Parameters | | | ES Class |
|-----|----------------|-------------------------------------|-------------------------|---------------|---------|----------|----------|
| | | | | Duration (ms) | Upk (V) | Ipk (mA) | |
| -- | -- | -- | Normal | -- | -- | -- | -- |
| | | | Abnormal | -- | -- | -- | |
| | | | Single fault – SC/OC | -- | -- | -- | |

5.2.2.5 - Repetitive Pulses

| No. | Supply Voltage | Location (e.g. circuit designation) | Test conditions | Parameters | | | ES Class |
|-----|----------------|-------------------------------------|-------------------------|---------------|---------|----------|----------|
| | | | | Off time (ms) | Upk (V) | Ipk (mA) | |
| -- | -- | -- | Normal | -- | -- | -- | -- |
| | | | Abnormal | -- | -- | -- | |
| | | | Single fault – SC/OC | -- | -- | -- | |

| Clause | Requirement-Test | Result-Remark | Verdict |
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Test Conditions:

Normal – Full load and no load.

Abnormal – Overload output

Supplementary information: SC=Short Circuit, OC=Open Circuit

| | | | | | | | | |
|--|---------------------------------|--|------|----|----|----|----|------------------------|
| 5.4.1.4, 6.3.2, 9.0, B.2.6 | TABLE: Temperature measurements | | | | | | | P |
| | Supply voltage (V) : | 3Vd.c. (supply by 1* CR2450 battery) | | -- | -- | -- | -- | — |
| | Ambient T_{min} (°C) : | -- | -- | -- | -- | -- | -- | — |
| | Ambient T_{max} (°C) : | -- | -- | -- | -- | -- | -- | — |
| | Tma (°C) : | -- | 55.0 | -- | -- | -- | -- | — |
| Maximum measured temperature T of part/at: | | T (°C) | | | | | | Allowed T_{max} (°C) |
| PCB near U1 | | 27.6 | 58.3 | -- | -- | -- | -- | 130 |
| PCB near U3 | | 27.6 | 58.3 | -- | -- | -- | -- | 130 |
| PCB near L1 | | 26.9 | 57.6 | -- | -- | -- | -- | 130 |
| PCB near U2 | | 27.1 | 57.8 | -- | -- | -- | -- | 130 |
| Battery surface | | 27.2 | 57.9 | -- | -- | -- | -- | Ref |
| Plastic enclosure inside near PCB | | 26.2 | 56.9 | -- | -- | -- | -- | Ref |
| Plastic enclosure inside near battery | | 25.6 | 56.3 | -- | -- | -- | -- | Ref |
| Ambient | | 24.3 | 55.0 | -- | -- | -- | -- | -- |
| Touch temperature: | | | | | | | | |
| Plastic enclosure outside near PCB | | 25.1 | 25.8 | -- | -- | -- | -- | 48 |
| Plastic enclosure outside near battery | | 24.8 | 25.5 | -- | -- | -- | -- | 48 |
| Ambient | | 24.3 | 25.0 | -- | -- | -- | -- | 48 |
| Supplementary information: * Temperature limit for TS1 of accessible enclosure according to Table 38. | | | | | | | | |
| Note 1: The apparatus was submitted and evaluated for maximum manufacturer's recommended ambient (T_{ma}) of 55°C. | | | | | | | | |
| Note 2: The temperatures were measured under the worst box normal mode defined in clause B.2.1. | | | | | | | | |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|--------|------------------|---------------|---------|
|--------|------------------|---------------|---------|

| Temperature T of winding: | t_1 (°C) | R_1 (Ω) | t_2 (°C) | R_2 (Ω) | T (°C) | Allowed T_{max} (°C) | Insulation class |
|---------------------------|------------|--------------------|------------|--------------------|--------|------------------------|------------------|
| -- | -- | -- | -- | -- | -- | -- | -- |

| | | | | |
|----------------------------|------------------------------------|-----------------|------------------|----------|
| 5.4.1.8 | Table: working voltage measurement | | | N/A |
| Location | | RMS voltage (V) | Peak voltage (V) | Comments |
| -- | | -- | -- | -- |
| supplementary information: | | | | |

| 5.4.1.10.2 | TABLE: Vicat softening temperature of thermoplastics | N/A |
|----------------------------|---|------------------|
| Penetration (mm) | | — |
| Object/ Part No./Material | Manufacturer/trademark | T softening (°C) |
| -- | -- | -- |
| supplementary information: | | |

| | | | | |
|---|---|-----------------------|--------------------------|-----|
| 5.4.1.10.3 | TABLE: Ball pressure test of thermoplastics | | | N/A |
| Allowed impression diameter (mm): | | ≤ 2 mm | | — |
| Object/Part No./Material | Manufacturer/trademark | Test temperature (°C) | Impression diameter (mm) | |
| -- | -- | -- | -- | |
| Supplementary information: | | | | |

| | | | | | | | | |
|--|---|--------------|-----------------|------------------|----------------------|-------------------------------|---------|-----|
| 5.4.2.2, 5.4.2.4 and 5.4.3 | TABLE: Minimum Clearances/Creepage distance | | | | | | | N/A |
| Clearance (cl) and creepage distance (cr) at/of/between: | Up (V) | U r.m.s. (V) | Frequency (kHz) | Required cl (mm) | cl (mm) ² | Required ³ cr (mm) | cr (mm) | |
| -- | -- | -- | -- | -- | -- | -- | -- | |
| Supplementary information: | | | | | | | | |

| | | |
|----------------|---|-----|
| 5.4.2.3 | TABLE: Minimum Clearances distances using required withstand voltage | N/A |
| | Overvoltage Category (OV): | |
| | Pollution Degree: | |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|--------|------------------|---------------|---------|
|--------|------------------|---------------|---------|

| Clearance distanced between: | Required withstand voltage | Required cl (mm) | Measured cl (mm) |
|------------------------------|----------------------------|------------------|------------------|
| -- | -- | -- | -- |
| Supplementary information: | | | |

| | | | | |
|-------------------------------|---|---------------------|--|-----------------------|
| 5.4.2.4 | TABLE: Clearances based on electric strength test | | | N/A |
| Test voltage applied between: | | Required cl (mm) | Test voltage (kV) peak/ r.m.s. / d.c. | Breakdown Yes / No |
| -- | | -- | | -- |
| Supplementary information: | | | | |

| | | | | | | |
|--|---|-------------------|----------|----------------------|-------------|-----|
| 5.4.4.2, 5.4.4.5 c) 5.4.4.9 | TABLE: Distance through insulation measurements | | | | | N/A |
| Distance through insulation di at/of: | Peak voltage (V) | Frequency (Hz) | Material | Required DTI (mm) | DTI (mm) | |
| -- | -- | -- | -- | -- | -- | |
| Supplementary information: | | | | | | |

| | | | | |
|-------------------------------|--------------------------------|---------------------------|----------------------|-----------------------|
| 5.4.9 | TABLE: Electric strength tests | | | N/A |
| Test voltage applied between: | | Voltage shape (AC, DC) | Test voltage (Vpeak) | Breakdown Yes / No |
| -- | | -- | -- | -- |
| Supplementary information: | | | | |

| | | | | | | |
|----------------------------|---------------------------------------|----------------------------|------------------------------|------------------------------------|-------------------|-----|
| 5.5.2.2 | TABLE: Stored discharge on capacitors | | | | | N/A |
| Supply Voltage (V), Hz | Test Location | Operating Condition (N, S) | Switch position On or off | Measured Voltage (after 2 seconds) | ES Classification | |
| -- | -- | -- | -- | -- | -- | |
| Supplementary information: | | | | | | |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|--------|------------------|---------------|---------|
|--------|------------------|---------------|---------|

| 5.6.6.2 | TABLE: Resistance of protective conductors and terminations | | | | N/A |
|----------------------------|--|----------------|------------------|-------------------------|-----|
| Accessible part | Test current (A) | Duration (min) | Voltage drop (V) | Resistance (Ω) | |
| -- | -- | -- | -- | -- | |
| Supplementary Information: | | | | | |

| | | | | | |
|-----------------------|--|---|--|--|--------------------|
| 5.7.2.2, 5.7.4 | TABLE: Earthed accessible conductive part | | | | N/A |
| Supply voltage..... : | | | | | — |
| Location | | Test conditions specified in 6.1 of IEC 60990 or Fault Condition No in IEC 60990 clause 6.2.2.1 through 6.2.2.8, except for 6.2.2.7 | | | Touch current (mA) |
| | | 1 (e closed, normal and reverse polarity p) | | | |
| | | 2* (netural open (switch n), earth intact and normal polarity, again in reverse polarity (switch p) | | | |
| | | 3 (for IT system, each phase conductor faulted to earth, one at a time (switch g) | | | |
| | | 4 (for three-phase, each phase conductor open, one at a time switches l) | | | |
| | | 5 (IT power system or three phase delta system) | | | |
| | | 6 (three-phase for use on centre-earthed dalta supply system) | | | |
| | | 8 (incidental electrically connected to other parts) | | | |

| Clause | Requirement-Test | Result-Remark | Verdict |
|--------|------------------|---------------|---------|
|--------|------------------|---------------|---------|

Notes:

[1] Supply voltage is the anticipated maximum Touch Voltage

[2] Earthed neutral conductor [Voltage differences less than 1% or more]

[3] Specify method used for measurement as described in IEC 60990 sub-clause 4.3

[4] IEC60990, sub-clause 6.2.2.7, Fault 7 not applicable.

[5] (*) IEC60990, sub-clause 6.2.2.2 is not applicable if switch or disconnect device (e.g., appliance coupler) provided.

a) Not considered IT power system.

b) Not three phase equipment.

c) Not IT power system or three phase delta system.

d) Not three-phase for use on centre-earthed delta supply system.

e) Not such parts.

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| Clause | Requirement-Test | Result-Remark | Verdict |
|--------|------------------|---------------|---------|
|--------|------------------|---------------|---------|

| 6.2.2 | Table: Electrical power sources (PS) measurements for classification | | | | | P |
|--|--|----------------------|------------------------|------------------------|-------------------|---|
| Source | Description | Measurement | Max Power after 3 s | Max Power after 5 s | PS Classification | |
| 3Vd.c. (supply by 1* CR2450 battery) | Max load | Power (W) : | 0.012 | -- | PS1 | |
| | | V _A (V) : | 3 | -- | | |
| | | I _A (A) : | 0.004 | -- | | |
| Supplementary Information: | | | | | | |
| (*) Measurement taken only when limits at 3 seconds exceed PS2 limits. | | | | | | |
| (**)supplied by internal button battery., PS1 circuit assumed. | | | | | | |

| | | | | | |
|----------------------------|---|-------------------------------|------------------------------|----------------------|-----|
| 6.2.3.1 | Table: Determination of Potential Ignition Sources (Arcing PIS) | | | | N/A |
| Location | Open circuit voltage After 3 s (Vp) | Measured r.m.s current (Irms) | Calculated value (Vp x Irms) | Arcing PIS? Yes / No | |
| See below | -- | -- | -- | -- | |
| Supplementary information: | | | | | |

| 6.2.3.2 | Table: Determination of Potential Ignition Sources (Resistive PIS) | | | | P |
|------------------------|---|---|--|--|-----------------------|
| Circuit Location (x-y) | Operating Condition (Normal / Describe Single Fault) | Measured wattage or VA During first 30 s (W / VA) | Measured wattage or VA After 30 s (W / VA) | Protective Circuit, Regulator, or PTC Operated? Yes / No (Comment) | Resistive PIS? Yes/No |
| button battery | OL | -- | -- | No | No |

Supplementary Information:

All power dissipating components in primary and secondary circuit which are supplied by a source exceeding 15W (since the output rating is higher than 15VA) are considered as resistive PIS.

A combination of voltmeter, VA and ammeter I_A may be used instead of a wattmeter.

If a separate voltmeter and ammeter are used, the product of (V_A x I_A) is used to determine Resistive PIS classification.

A Resistive PIS: (a) dissipates more than 15 W, measured after 30 s of normal operation, or (b) under single fault conditions has either a power exceeding 100 W measured immediately after the introduction of the fault if electronic circuits, regulators or PTC devices are used, or has an available power exceeding 15 W measured 30 s after introduction of the fault.

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| Clause | Requirement-Test | Result-Remark | Verdict |
|--------|------------------|---------------|---------|
|--------|------------------|---------------|---------|

| B.2.5 | TABLE: Input test | | | | | | | P |
|--|-------------------|-------|-------------|-------|-------------|---------|------------|--------------------|
| U (V) | Hz | I (A) | I rated (A) | P (W) | P rated (W) | Fuse No | I fuse (A) | Condition/status |
| 3VDC (supply by 1* CR2450 battery) | -- | 0.004 | -- | 0.012 | -- | -- | -- | Max normal working |
| Supplementary information: | | | | | | | | |
| | | | | | | | | |

| B.3 | TABLE: Abnormal operating condition tests | | | | | | | N/A |
|---|---|---------------------|----------------|----------|-------------------|-----------|------------|-------------|
| Ambient temperature (°C) | | | | | | See below | | — |
| Power source for EUT: Manufacturer, model/type, output rating .. | | | | | | -- | | — |
| Component No. | Abnormal Condition | Supply voltage, (V) | Test time (ms) | Fuse no. | Fuse current, (A) | T-couple | Temp. (°C) | Observation |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Supplementary information: | | | | | | | | |
| Test table is provided to record abnormal and fault conditions for all applicable energy sources including Thermal burn injury. Column “Abnormal/Fault.” Specify if test condition by indicating “Abnormal” then the condition for a Clause B.3 test or “Single Fault” then the condition for Clause B.4. | | | | | | | | |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|--------|------------------|---------------|---------|
|--------|------------------|---------------|---------|

| B.4 | TABLE: Fault condition tests | | | | | | | P |
|---|-------------------------------------|---------------------|----------------|----------|-------------------|----------|------------|--|
| Ambient temperature (°C) | | | | | See below | | | — |
| Power source for EUT: Manufacturer, model/type, output rating .. | | | | | -- | | | — |
| Component No. | Fault Condition | Supply voltage, (V) | Test time (ms) | Fuse no. | Fuse current, (A) | T-couple | Temp. (°C) | Observation |
| Q4 pinD—S | S—C | 3V | 10min | -- | -- | T type | -- | Battery discharging current: 4mA No hazard., no damaged |
| Q6 pinD—S | S—C | 3V | 10min | -- | -- | T type | -- | Battery discharging current: 4mA No hazard., no damaged |
| C38 | S—C | 3V | 10min | -- | -- | T type | -- | Unit shutdown Battery discharging current: 4mA A→0mA No hazard., no damaged |
| Supplementary information: | | | | | | | | |
| 1) S-C: Short-circuited; O-C: Open-circuited; O-L: Overloaded; OVC=Overcharge. | | | | | | | | |
| 2) The test result shown all safeguards remained effective and didn't lead to a single fault condition during abnormal operating condition; In addition all safeguards complied with applicable requirements in this standard after restoration of normal operating conditions. | | | | | | | | |

| Annex M | | | TABLE: Batteries | | | | | | | P |
|---|----------------------------|------------------|--------------------------------|------------------------|------------------|------------------|------------------|-------------------|------------------|---|
| The tests of Annex M are applicable only when appropriate battery data is not available | | | | | | | | | P | |
| Is it possible to install the battery in a reverse polarity position? | | | | | | Impossible | | | N/A | |
| | Non-rechargeable batteries | | | Rechargeable batteries | | | | | | |
| | Discharging | | Un- intentional charging | Charging | | Discharging | | Reversed charging | | |
| | Meas. current | Manuf. Specs. | | Meas. Current | Manuf. Specs. | Meas. Current | Manuf. Specs. | Meas. current | Manuf. Specs. | |
| Max. current during normal condition | 4mA | -- | -- | -- | -- | -- | -- | -- | -- | |

| Clause | Requirement-Test | Result-Remark | Verdict |
|--------|------------------|---------------|---------|
|--------|------------------|---------------|---------|

| | | | | | | | | | | | |
|---|----------------------------|---------------|-------------------------|------------------------|---------------|---------------|---------------|-------------------|---------------|---|--|
| Annex M | | | TABLE: Batteries | | | | | | | P | |
| The tests of Annex M are applicable only when appropriate battery data is not available | | | | | | | | | P | | |
| Is it possible to install the battery in a reverse polarity position? | | | | | | Impossible | | | N/A | | |
| | Non-rechargeable batteries | | | Rechargeable batteries | | | | | | | |
| | Discharging | | Un-intentional charging | Charging | | Discharging | | Reversed charging | | | |
| | Meas. current | Manuf. Specs. | | Meas. Current | Manuf. Specs. | Meas. Current | Manuf. Specs. | Meas. current | Manuf. Specs. | | |
| Max. current during fault condition SC Q4 pinD—S | 4mA | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | | | | | | | | | | | |
| Test results: | | | | | | | | | Verdict | | |
| - Chemical leaks | | | | | | No leaks | | | P | | |
| - Explosion of the battery | | | | | | No explosion | | | P | | |
| - Emission of flame or expulsion of molten metal | | | | | | No emission | | | P | | |
| - Electric strength tests of equipment after completion of tests | | | | | | No need | | | N/A | | |
| Supplementary information: | | | | | | | | | | | |
| S-C: Short-circuited | | | | | | | | | | | |

| Annex M.4 | TABLE: Additional safeguards for equipment containing secondary lithium batteries | | | | | N/A |
|----------------------------|---|--------------|---------------------------------------|-------------|-------------|-----|
| Battery/Cell No. | Test conditions | Measurements | | | Observation | |
| | | U | I (A) | Temp (°C) | | |
| -- | Normal | -- | -- | -- | -- | |
| | Single fault –SC | -- | -- | -- | -- | |
| Supplementary Information: | | | | | | |
| SC: Short-circuited | | | | | | |
| Battery identification | Charging at T _{lowest} (°C) | Observation | Charging at T _{highest} (°C) | Observation | | |
| -- | -- | -- | -- | -- | | |
| Supplementary Information: | | | | | | |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|--------|------------------|---------------|---------|
|--------|------------------|---------------|---------|

| Battery identification | Charging at T_{lowest} (°C) | Observation | Charging at $T_{highest}$ (°C) | Observation |
|------------------------|-------------------------------|-------------|--------------------------------|-------------|
| | | | | |

| | | | | | | | |
|---|---|---------------------|---------------------|-------|--------|-------|--|
| Annex Q.1 | TABLE: Circuits intended for interconnection with building wiring (LPS) | | | | | N/A | |
| Note: Measured UOC (V) with all load circuits disconnected: | | | | | | | |
| Output Circuit | Components | U _{oc} (V) | I _{sc} (A) | | S (VA) | | |
| | | | Meas. | Limit | Meas. | Limit | |
| -- | -- | | | 8 | | 100 | |
| Supplementary Information: | | | | | | | |
| S-C: Short-circuited; O-C: Open-circuited | | | | | | | |

| | | | | | | |
|----------------------------|--------------------------|----------------|-----------|---------------------|----------------------|---|
| T.2, T.3, T.4, T.5 | TABLE: Steady force test | | | | | P |
| Part/Location | Material | Thickness (mm) | Force (N) | Test Duration (sec) | Observation | |
| Enclosure (side) | Plastic | 1.71 | 100 | 5 | No damage, no hazard | |
| Enclosure(bottom) | Plastic | 1.71 | 100 | 5 | No damage, no hazard | |
| Enclosure(top) | Plastic | 1.71 | 100 | 5 | No damage, no hazard | |
| Supplementary information: | | | | | | |
| | | | | | | |

| | | | | | |
|----------------------------|---------------------|----------------|------------------------|-------------|-----|
| T.6, T.9 | TABLE: Impact tests | | | | N/A |
| Part/Location | Material | Thickness (mm) | Vertical distance (mm) | Observation | |
| -- | -- | -- | -- | -- | |
| Supplementary information: | | | | | |
| | | | | | |

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| Clause | Requirement-Test | Result-Remark | Verdict |
|--------|------------------|---------------|---------|
|--------|------------------|---------------|---------|

| T.7 | TABLE: Drop tests | | | | P |
|----------------------------|-------------------|----------------|------------------|----------------------|---|
| Part/Location | Material | Thickness (mm) | Drop Height (mm) | Observation | |
| Enclosure (Side) | Plastic | 1.71 | 1000 | No damage, no hazard | |
| Enclosure (bottom) | Plastic | 1.71 | 1000 | No damage, no hazard | |
| Enclosure(top) | Plastic | 1.71 | 1000 | No damage, no hazard | |
| Supplementary information: | | | | | |
| | | | | | |

| T.8 | TABLE: Stress relief test | | | | | P |
|----------------------------|---------------------------|-------------------|-----------------------------|-----------------|----------------------|---|
| Part/Location | Material | Thickness (mm) | Oven Temperature (°C) | Duration (h) | Observation | |
| Enclosure | Plastic | 1.71 | 70 | 7 | No damage, no hazard | |
| Supplementary information: | | | | | | |
| | | | | | | |

6 Product Marking Label



Label of main unit

7 PHOTO DOCUMENT

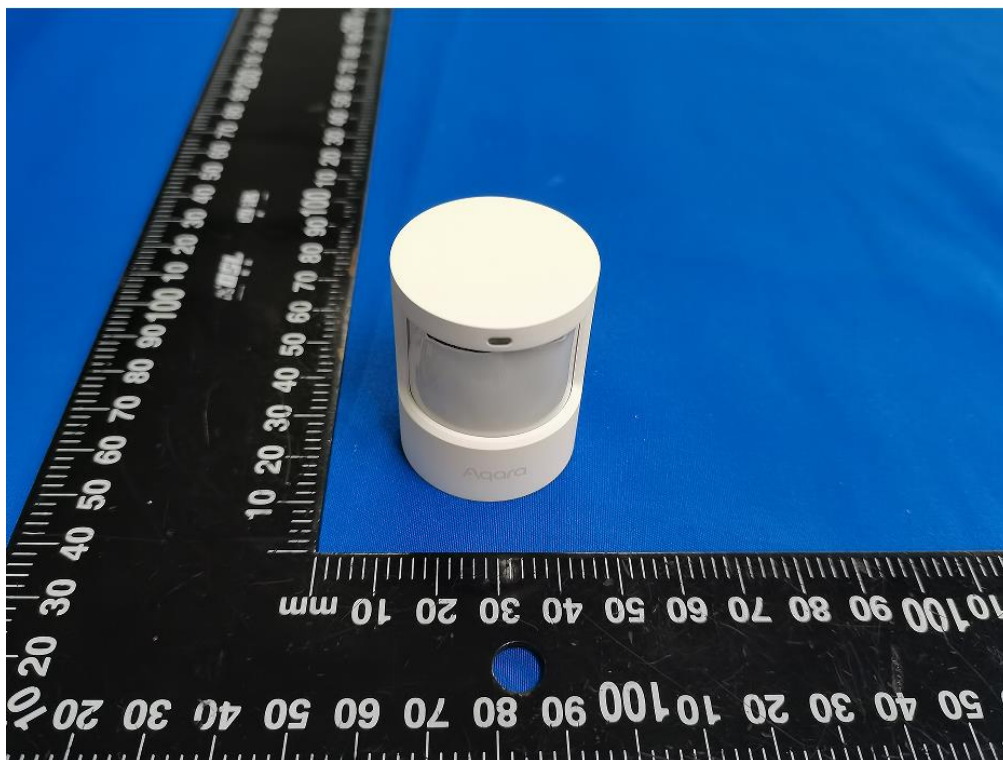


Figure 1. Overall view

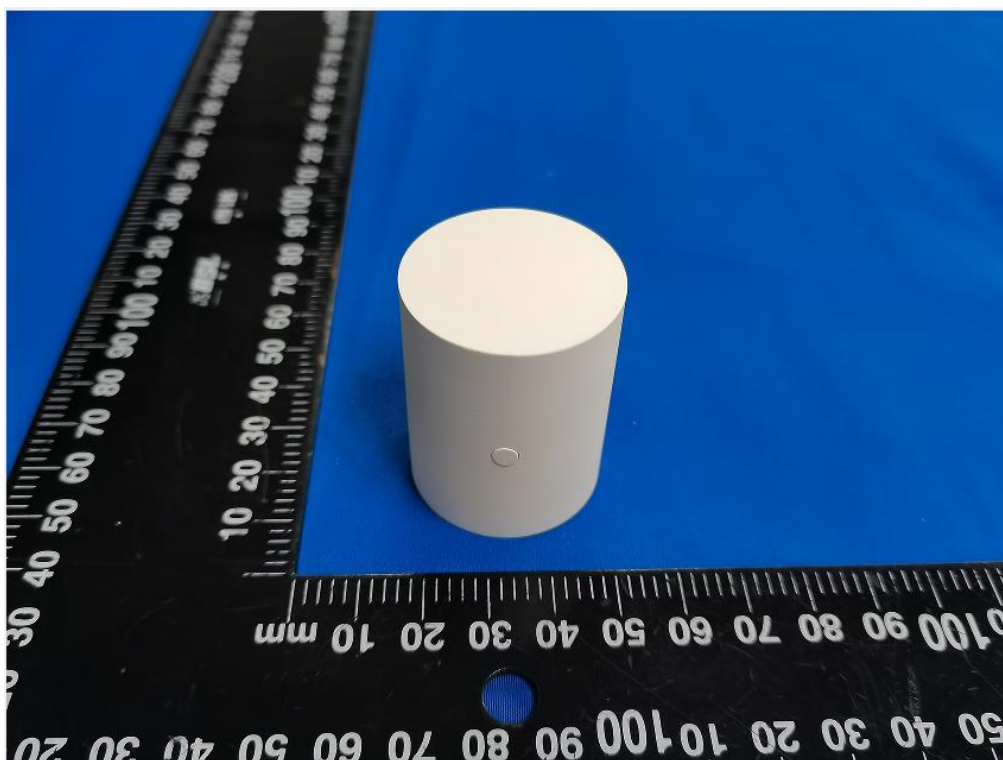


Figure 2. Overall view

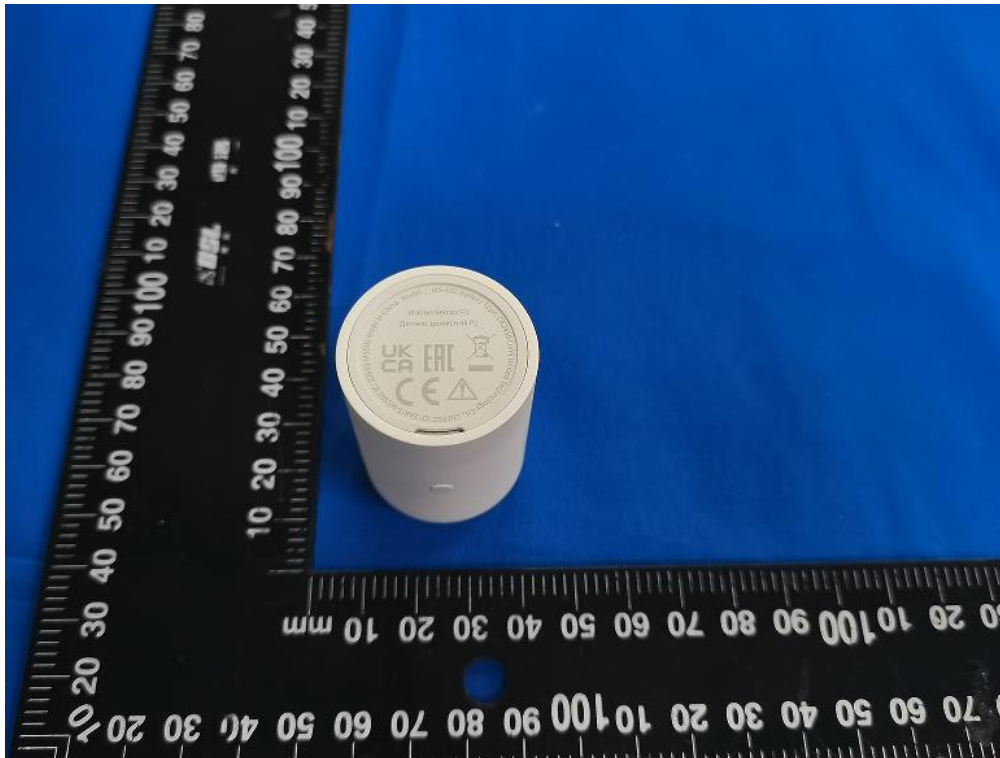


Figure 3. Overall view

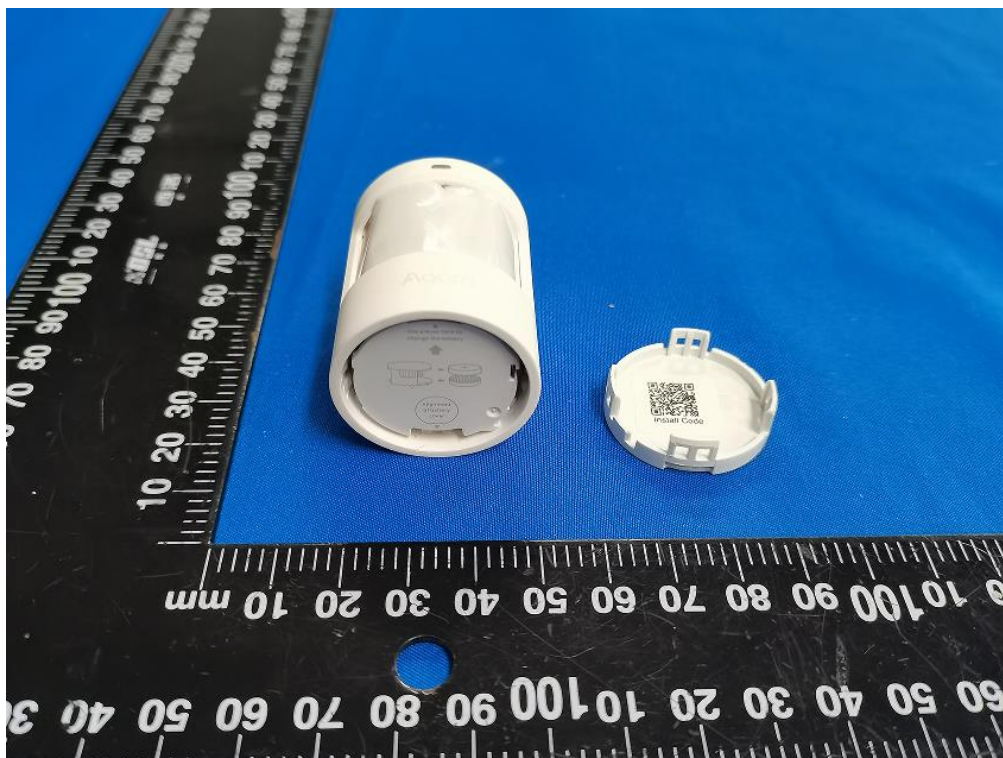


Figure 4. Internal view

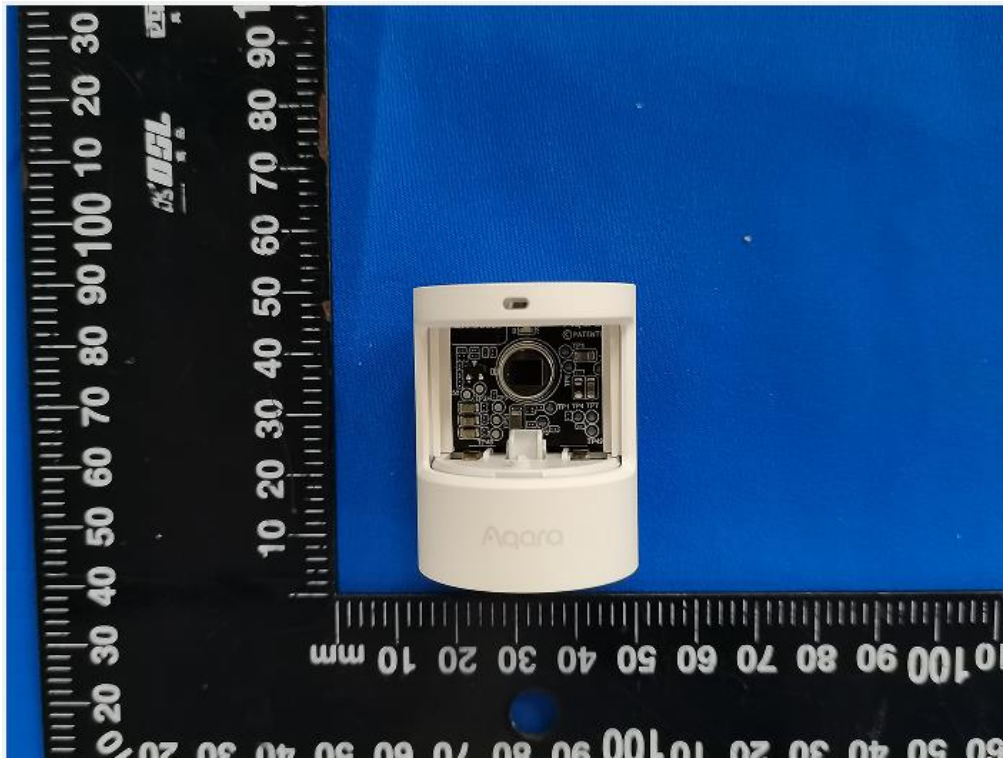


Figure 5. Internal view

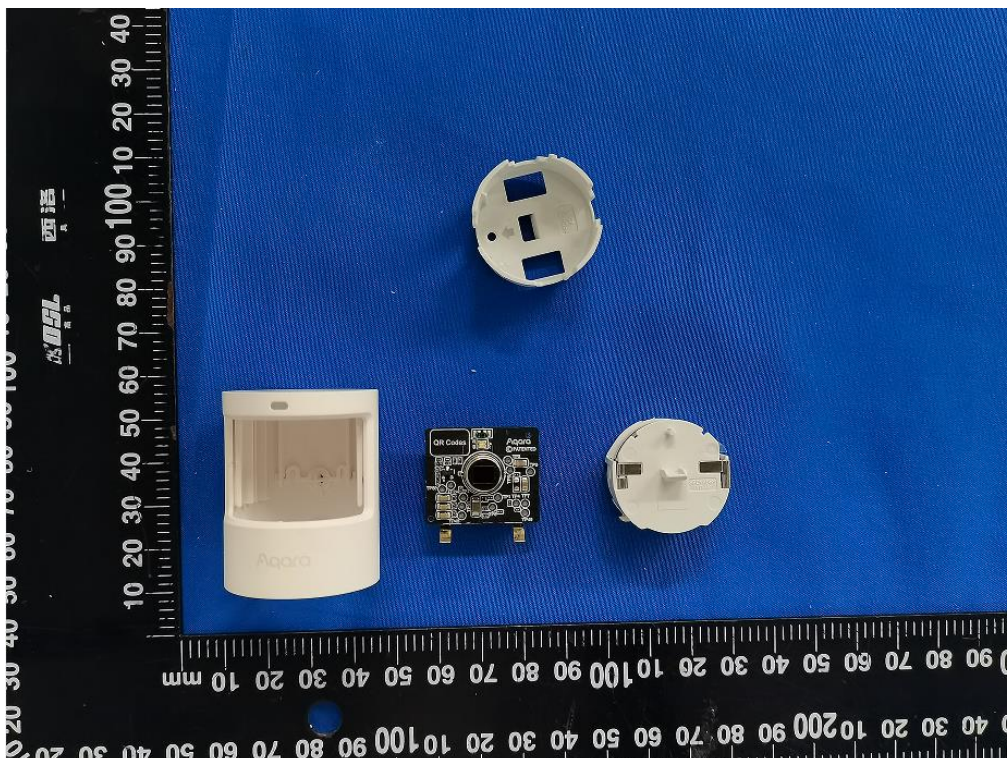


Figure 6. Internal view

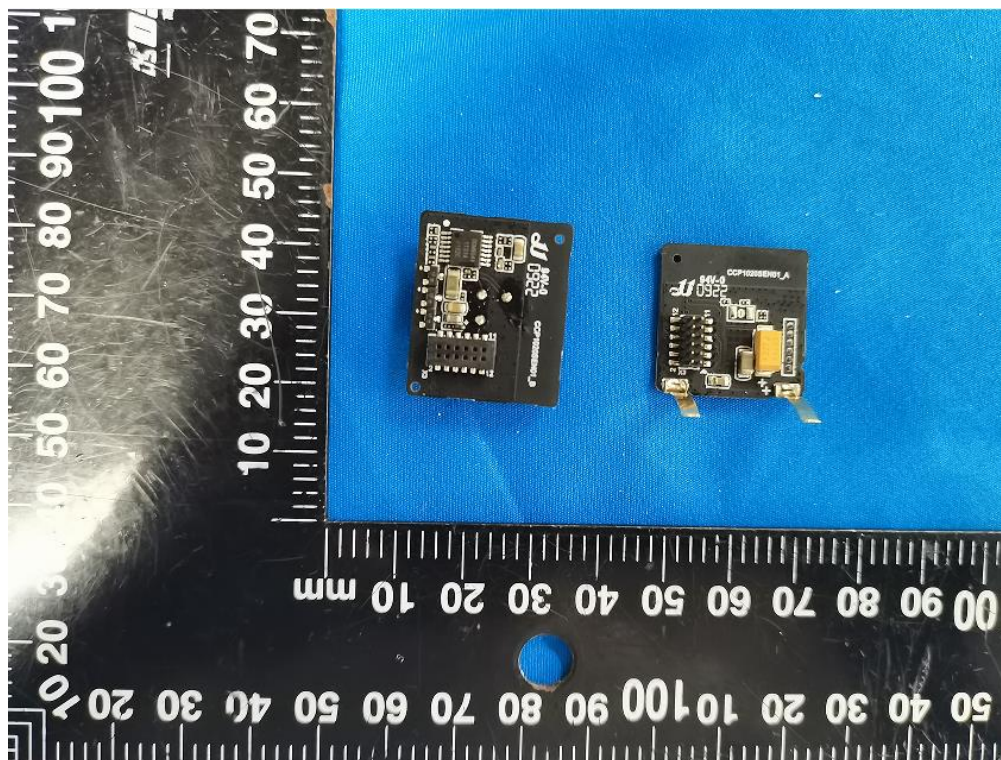


Figure 7. PCB view

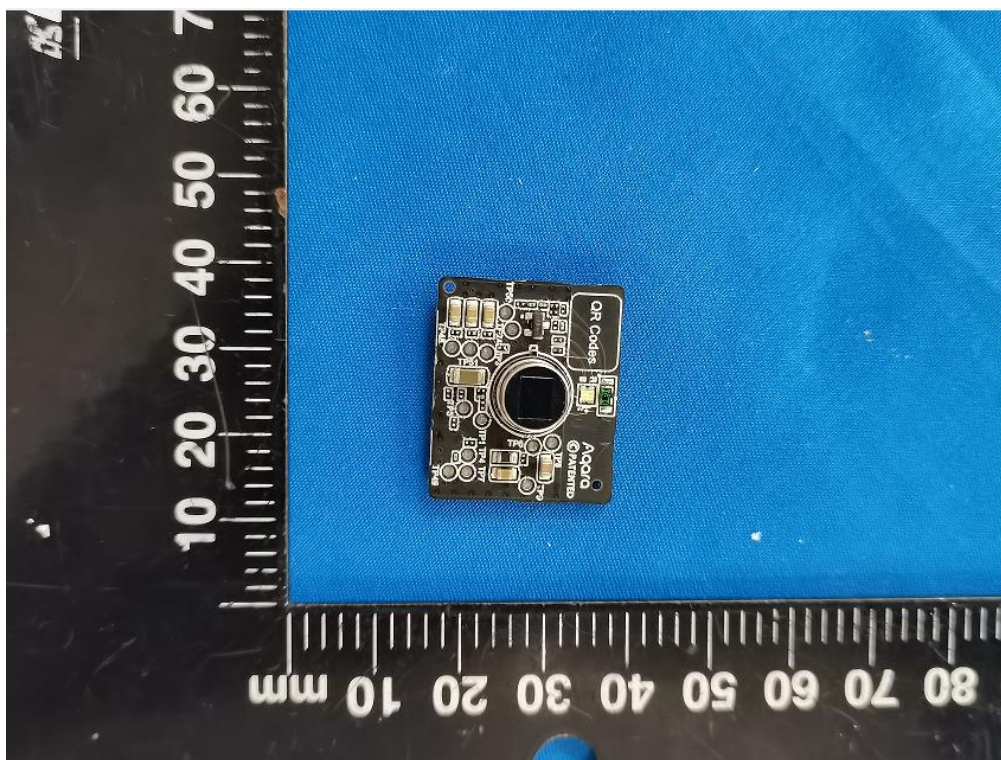


Figure 8. PCB view

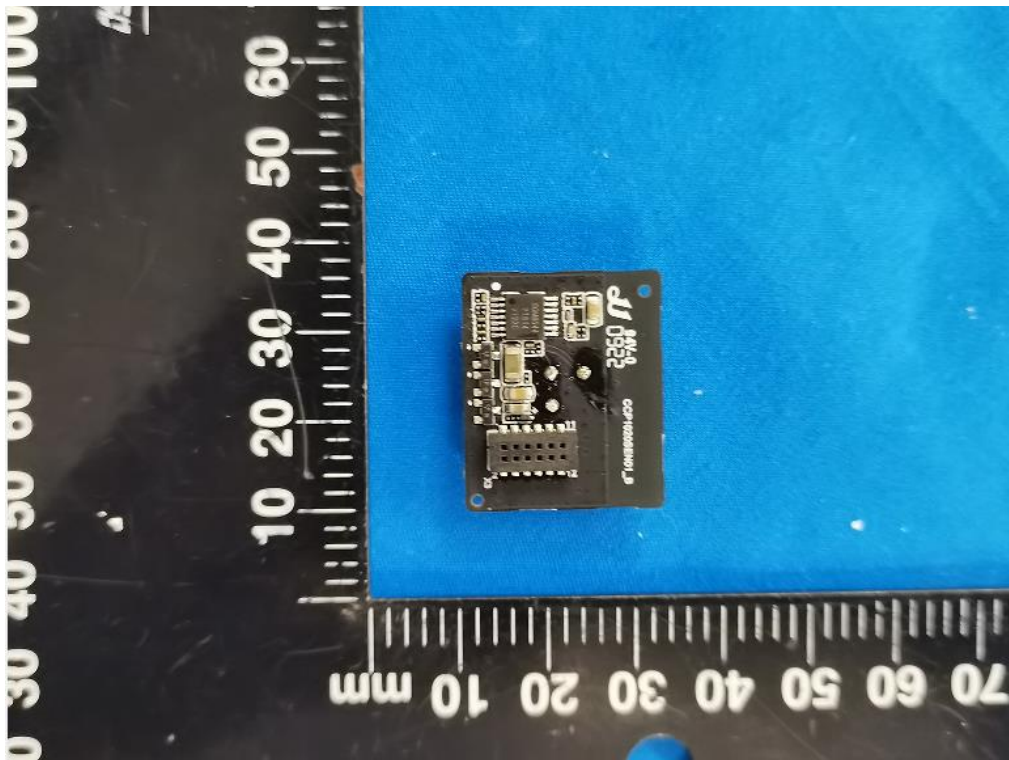


Figure 9. PCB view

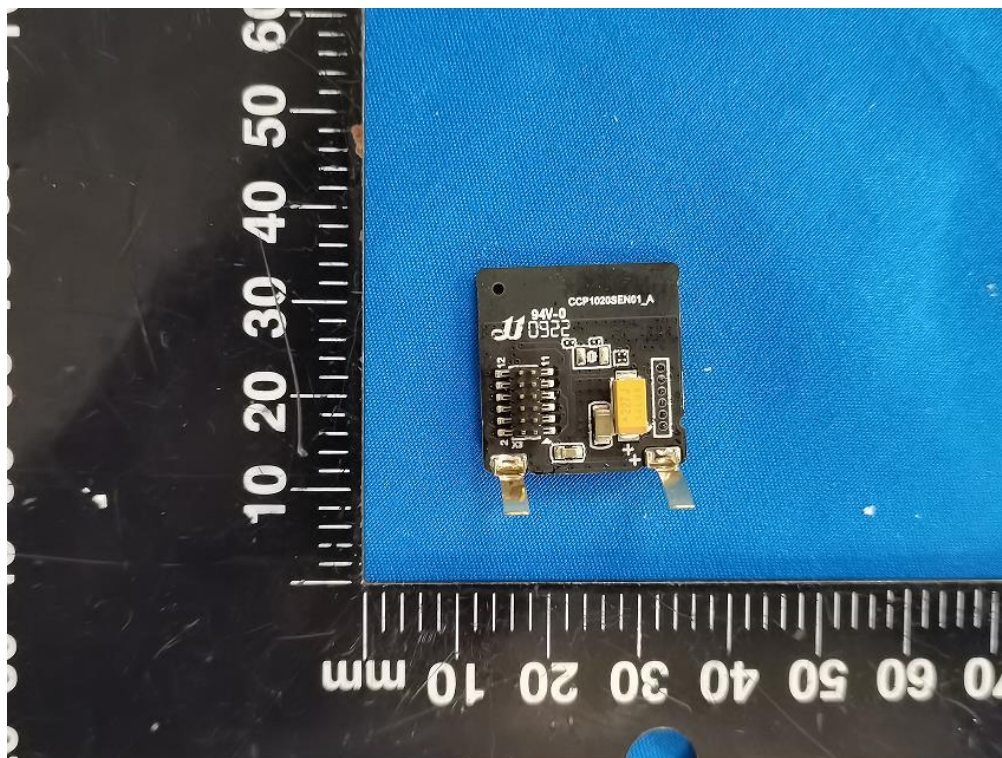


Figure 10. PCB view

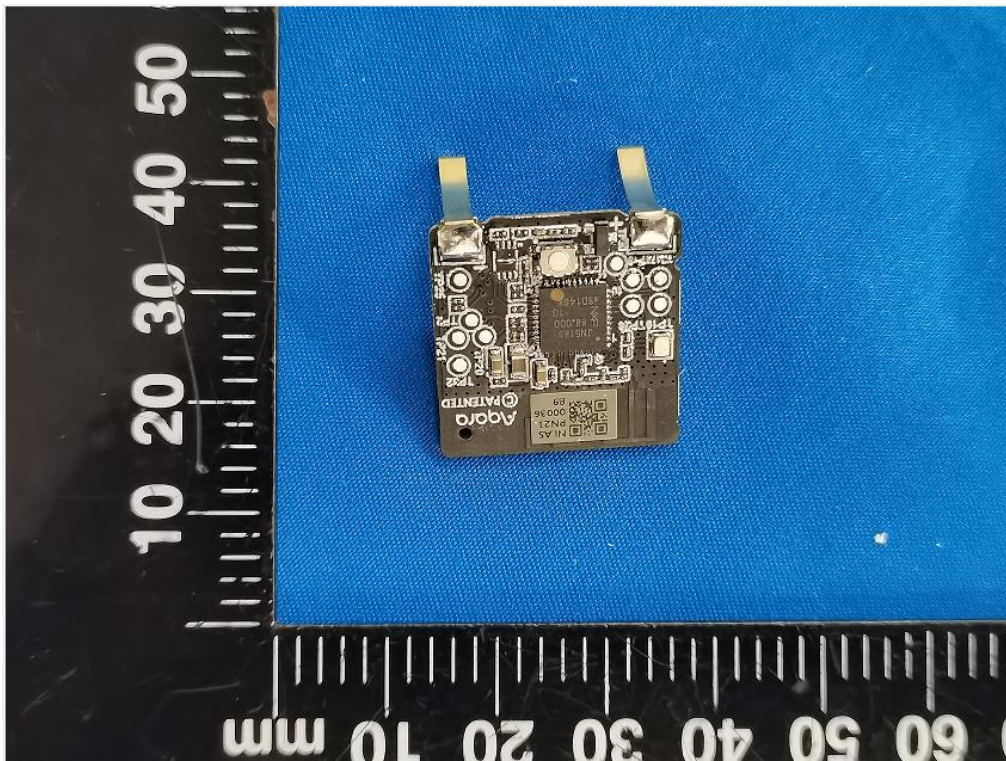


Figure 11. PCB view

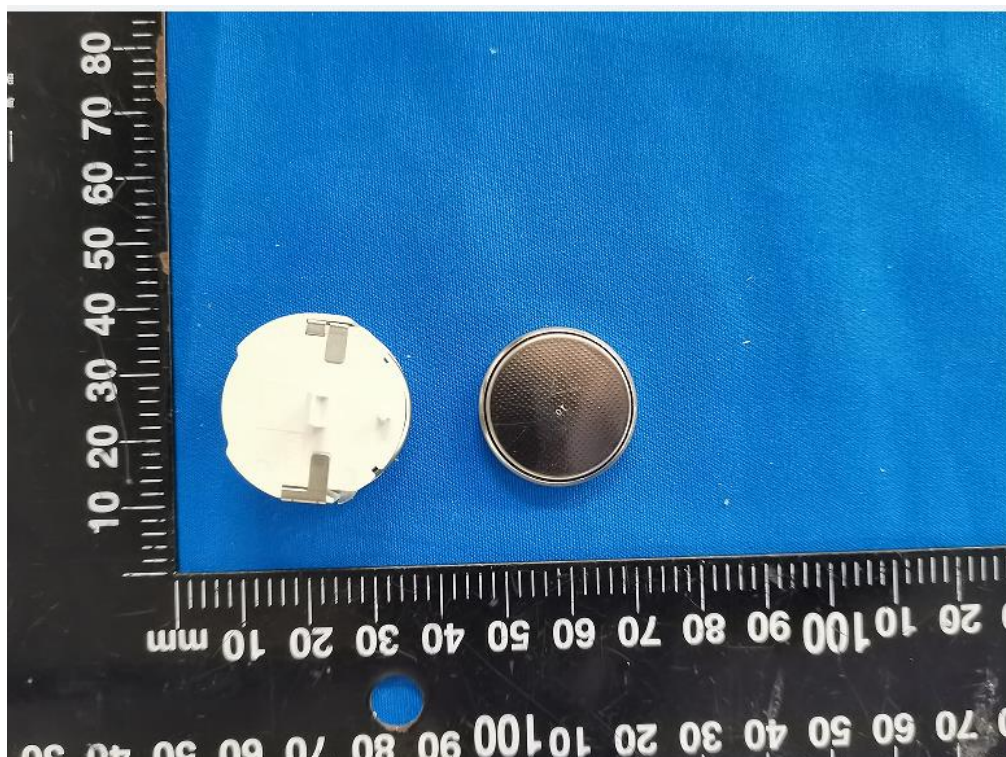


Figure 12. Button battery view

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